Service Manual

ViewSonic Q9b-2

Model No. VS11201

19” Color TFT LCD Display

(Q9b-2_SM Rev. 1b Aug. 2006)

ViewSonic 381 Brea Canyon Road, Walnut, California 91789 USA – (800) 888-8583

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Revision History

Revision	SM Editing Date	ECR Number	Description of Changes	Editor
1a	05/02/2006		Initial Release	Jamie Chang
1b	08/22/2006	VS-E060267 VS-E060268	Add 2nd panel source(HSD190ME-A10/A16) (updated RSPL, BOM, Spec.)	Jamie Chang

TABLE OF CONTENTS

1. Precautions and Safety Notices

1. Appropriate Operation

(1) Turn off the product before cleaning.
(2) Use only a dry soft cloth when cleaning the LCD panel surface.
(3) Use a soft cloth soaked with mild detergent to clean the display housing.
(4) Use only a high quality, safety approved AC/DC power cord.
(5) Disconnect the power plug from the AC outlet if the product will not be used for a long period of time.
(6) If smoke, abnormal noise, or strange odor is present, immediately switch the LCD display off.
(7) Do not touch the LCD panel surface with sharp or hard objects.
(8) Do not place heavy objects on the LCD display, video cable, or power cord.
(9) Do not use abrasive cleaners, waxes or solvents for your cleaning.
(10) Do not operate the product under the following conditions:
- Extremely hot, cold or humid environment.
- Areas containing excessive dust and dirt.
- Near any appliance generating a strong magnetic field.
- In direct sunlight.

2. Caution

No modification of any circuit should be attempted. Service work should only be performed after you are thoroughly familiar with all of the following safety checks and servicing guidelines.

3. Safety Check

Care should be taken while servicing this LCD display. Because of the high voltage used in the inverter circuit, the voltage is exposed in such areas as the associated transformer circuits.

4. LCD Module Handling Precautions

4.1 Handling Precautions

(1) Since front polarizer is easily damaged, pay attention not to scratch it.
(2) Be sure to turn off power supply when connecting or disconnecting input connector.
(3) Wipe off water drops immediately. Long contact with water may cause discoloration or spots.
(4) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
(5) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface.
(6) Since CMOS LSI is used in this module, take care of static electricity and ensure human earth when handling.
(7) Do not open or modify the Module Assembly.
(8) Do not press the reflector sheet at the back of the module in any direction.
(9) In the event that a Module must be put back into the packing container slot after it was taken out of the container, do not press the center of the CCFL Reflector edge. Instead, press at the far ends of the CFL Reflector edge softly. Otherwise the TFT Module may be damaged.
(10) At the insertion or removal of the Signal Interface Connector, be sure not to rotate or tilt the Interface Connector of the TFT Module.

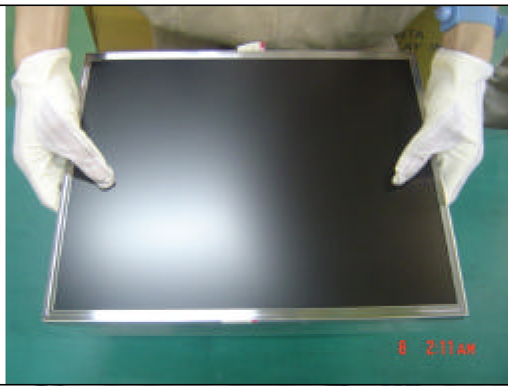
(11) After installation of the TFT Module into an enclosure (LCD monitor housing, for example), do not twist or bend the TFT Module even momentarily. When designing the enclosure, it should be taken into consideration that no bending/twisting forces may be applied to the TFT Module from outside. Otherwise the TFT Module may be damaged.

(12) The cold cathode fluorescent lamp in the LCD contains a small amount of mercury. Please follow local ordinances or regulations for disposal.

(13) The LCD module contains a small amount of materials having no flammability grade. The LCD module should be supplied with power that complies with the requirements of Limited Power Source (IEC60950 or UL1950), or an exemption should be applied for.

(14) The LCD module is designed so that the CCFL in it is supplied by a Limited Current Circuit (IEC60950 or UL1950). Do not connect the CCFL to a Hazardous Voltage Circuit.

Handing and Placing methods

Correct methods	Incorrect methods
Only touch the metal frame of the LCD panel or the front cover of the monitor, DO not touch the surfaceof the POL	Surface of the LCD panel is pressed by fingers and that may cause”mura”
	
	
Take out the monitor with cushions	Taking out the monitor by grasping the LCD panel, that May cause”mura”
	

Correct methods	**Incorrect methods**
Place the monitor on a clean and soft foam pad	Placing the monitor on a foreign objects, that could scratch The surface of the "Panel" or cause "mura"
	
	The panel is placed facedown the lap,that may cause "mura"
	

2. Specification

2-1 GENERAL specification

Test Resolution & Frequency	1280x1024 @ 75Hz
Test Image Size	Full Size
Contrast and Brightness Controls	Factory Default: Contrast = 90%, Brightness = 100%

2-2 VIDEO INTERFACE

Input Connector (refer the appendix A)	DB-15 (Analog)
Default Input Connector	Defaults to the first detected input
Video Cable Strain Relief	Equal to twice the weight of the monitor for five minutes
Video Cable Connector DB-15 Pin out	Compliant 2B
Video Signals	Video RGB (Analog) Separate Sync TMDS (Digital)
Video Impedance	75 Ohms (Analog), 100 Ohms (Digital)
Maximum PC Video Signal	950 mV with no damage to monitor
Maximum Mac Video Signal	1250 mV with no damage to monitor
Sync Signals	TTL
DDC2B	Compliant with Revision 1.0
Sync Compatibility	Separate Sync
Video Compatibility	Shall be compatible with all PC type computers, Macintosh computers, and after market video cards
Resolution Compatibility	640x350, 720x400, 640x480, 800x600, 832x624, 1024x768, 1152x864, 1152x870, 1280x960, 1280x1024
Exclusions	Not compatible with interlaced video

2-3 USB INTERFACE

N/A

2-4 POWER SUPPLY

Internal Power Supply	FSP FSP035-1PI01ZT
Input Voltage Range	90 to 264 VAC
Input Frequency Range	47.5 to 63 Hertz
Short Circuit Protection	Output can be shorted without damage
Over Current Protection	5.0 A typical at 12.0 VDC
Leakage Current	3.5mA (Max) at 254VAC / 60Hz
Efficiency	80 % typical at 115VAC Full Load
Fuse	Internal and not user replaceable
Power Dissipation	36W(typ) 40W(max)
Max Input AC Current	1.5 Arms @ 90VAC, 0.75 Arms @180VAC
Inrush Current (Cold Start)	50 A (max) @ 115VAC 90 A (max) @ 230VAC
Power Supply Cold Start	Shall start and function properly when under full load, with all combinations of input voltage, input frequency, and operating temperature.
Power Supply Transient Immunity	Shall be able to withstand an ANSI/IEEE C62.41-1980 6000V 200 ampere ring wave transient test with no damage.
Power Supply Line Surge Immunity	Shall be able to withstand 1.5 times nominal line voltage for one cycle with no damage.
Power Supply Missing Cycle Immunity	Shall be able to function properly, without reset or visible screen artifacts, when ½ cycle of AC power is randomly missing at nominal input.
Power Supply Acoustics	The power supply shall not produce audible noise that would be detectable by the user. Audible shall defined to be in compliance with ISO 7779 (DIN EN27779:1991) Noise measurements of machines acoustics. Power Switch noise shall not be considered.
Power Saving Operation(Method)	VESA DPMS Signaling
Power Consumption	On Mode < 36W(Typ) / 40W (max) Active Off < 1 W @ 120 Vac / < 1.5W @ 220Vac
Recovery Time	On Mode = N/A, Active Off < 3 sec

2-5 ELECTRICAL REQUIREMENT

Horizontal / Vertical Frequency

Horizontal Frequency	30 – 80 kHz
Vertical Refresh Rate	55 – 75 Hz.
Maximum Pixel Clock	135 MHz
Sync Polarity	Independent of sync polarity.

Timing Table

Item	Timing						Analog Separated	Analog Composite	Analog SOG	Digital - TMDS	Remark
1	640 x 350	@	70	Hz,	31.5	KHz					The vertical image size might not full screen (Vertical position = center).
2	640 x 480	@	60	Hz,	31.5	KHz					
3	640 x 480	@	67	Hz,	35	KHz					
4	640 x 480	@	72	Hz,	37.9	KHz					
5	640 x 480	@	75	Hz,	37.5	KHz					
6	720 x 400	@	70	Hz,	31.5	KHz					
7	800 x 600	@	56	Hz,	35.1	KHz					
8	800 x 600	@	60	Hz,	37.9	KHz					
9	800 x 600	@	72	Hz,	48.1	KHz					
10	800 x 600	@	75	Hz,	46.9	KHz					
11	832 x 624	@	75	Hz,	49.7	KHz					
12	1024 x 768	@	60	Hz,	48.4	KHz					
13	1024 x 768	@	70	Hz,	56.5	KHz					
14	1024 x 768	@	75	Hz,	60.2	KHz					
15	1152 x 864	@	75	Hz,	67.5	KHz					
16	1152 x 870	@	75	Hz,	68.7	KHz					
17	1280 x 960	@	60	Hz,	59.7	KHz					
18	1280 x 1024	@	60	Hz,	64	KHz					
19	1280 x 1024	@	75	Hz,	80	KHz					

Primary Presets

1280x1024 @ 75Hz

User Presets

Number of User Presets (recognized timings) Available: 10 presets total in FIFO configuration

Changing Modes

- Maximum Mode Change Blank Time for image stability : 3 seconds (Max), excluding “Auto Adjust” time
- The monitor needs to do “Auto Adjust” the first time a new mode is detected
(see section “0-Touch™ Function Actions”)
- While running Change Mode, Auto Adjust or Memory Recall, the image shall blank

2-6 FRONT PANEL CONTROLS AND INDICATORS

Front Panel Hardware Controls

Power Switch (Front Head)	Power Control, soft Power Switch.
Power LED (Front Head)	Green – ON Orange – Active Off Dark = Soft Power Switch OFF
Front Panel Controls (Head; From left to right)	Button / Icon / Function Button1 / ✔ / Select(backward) Button2 / ✔ / Select(forward) Button3 / ⏻ / Power Button4 / - / Adjust Down Button5 / + / Adjust Up
Reaction Time	OSD must fully appear within 0.5s after pushing Button 1

Short Cuts Function from the button(s)

Button 1	Auto Image Adjust.
Button 2	Main Menu
Button 4	Mute on/off
Button 5	Volume OSD
Button 4 + Button 5 + Button 3	Factory Mode (The Burning mode is build in Factory mode)
Remark : All the short cuts function are only available while OSD off	

Function descriptions

Main Menu Controls The Main Menu OSD include most of control functions. Please refer to APPENDIX B (Main Menu OSD Table) for the detail.
Factory Default OSD Actions Memory Recall action on the analog and digital mode as below 1. Set the factory defaults as shown in Section 2-8 2. Clean all the mode setting buffer 3. Execute Auto Image Adjust
0-Touch™ Function Actions 1. Execute Auto Image Adjust when new mode detected, and save the settings to buffer for further use 2. It should be reset by Memory Recall function (Should not reset by power off, power unplug and others)
OSD Auto Save The OSD shall save new settings when it is turned off by the user or when it times out. There shall not be a separate save

Factory Defaults

Item	Defaults
Contrast	90
Brightness	100
Color Setting	NATIVE

2-7 AUDIO INTERFACE (SPEAKER SPECIFICATION)

Speaker specification

Line input connection	3.5 mm stereo jack
Line input signal	0.7 Vrms
Line input impedance	18 kOhm
Maximum power output (Electric)	1 W@ < 15 % distortion
Signal to Noise Ratio	50 dB
Frequency response	200 Hz – 10 Khz
Distortion	< 5 % THD (@1kHz)
Vibration	There should be no audible vibration with volume at 100% and treble / bass at default.
Screen image	There should be no affect on the screen image stability under any conditions.
Connector PC99 requirement Audio in	Lime Green pantone # 577C
Cable type / length	3.5mm stereo cable / 1.8m length
Audio DPMS	Speakers should be off when the rest of the monitor is in power saving.
Sympathetic	Under following conditions, there should be no sympathetic heard 1. input <=0.7Vrms 2. Volume OSD <=80 Distance =30cm ±5cm

2-8 Panel Characteristics :

1st and 2nd Source Panel

Model number	1st Source Panel: Hannstar HSD190ME13-A16 2nd Source Panel: Hannstar HSD190ME13-A10
Type	Active Matrix TFT, TN technology
Active Size	19”
Pixel Arrangement	RGB Vertical Stripe
Pixel Pitch	0.294 mm
Glass Treatment	Anti-Glare
# of Backlights	4 CCFL
Backlight Life	40000 Hrs (Min) 50000 Hrs (Typ)
Luminance (Center) – CCT = User Color (R/G/B=100%), Contrast/ Brightness = Max	300 cd/m2 (Typ after 30 minute warm up) 240 cd/m2 (Min after 30 minute warm up)
Brightness Uniformity	75 % (Typ) / 70 % (Min)
Contrast Ratio	700 :1 (Typ) 450 : 1 (Min)
Color Depth	16.2 million colors (6+2 bit panel)
Viewing Angle H, V, D (CR >10)	**Typical:** H = 150 degrees V = 135 degrees **Minimum:** H = 130 degrees V = 115 degrees
Viewing Angle H, V, D (CR >5)	**Typical:** H = 160 degrees V = 155 degrees
Response Time 10%-90% @ Ta=25°C	**On/Off** Typical = 8 ms Maximun = 12 ms
Mercury	3.0 mg per lamp
Panel Defects	Please see Panel Quality Specifications.

*Over 50% units per shipment shall meet the Typical value above.

2-9 IMAGE PERFORMANCE

Display Size

Horizontal Display Size, Primary Preset	Full Screen
Vertical Display Size, Primary Preset	Full Screen

Luminance

Lv (Max) –Condition: Brightness / Contrast = 100% Color Temperature = User (R/G/B=100)	Lv (Max) = The Luminance requirement of section 2-6 “TFT LCD PANEL”
Lv (NATIVE) –Condition: Brightness = Default / Contrast = Default Color Temperature = NATIVE	Lv (NATIVE) / Lv (Max) x 100% > 85%
Lv (COOL) –Condition: Brightness = Default / Contrast = Default Color Temperature = COOL	Lv (COOL) / Lv (Max) x 100% > 70%
Lv (WARM) –Condition: Brightness = Default / Contrast = Default Color Temperature = WARM	Lv (WARM) / Lv (Max) x 100% > 70%

Contrast Ratio

CR(Max) –Condition: Contrast / Brightness = 100% Color Temperature = User (R/G/B=100)	Same as the Contrast Ratio in section 2-6 “TFT LCD PANEL”

Saturation

Contrast = Default Brightness = Default Test pattern = 128-gray	No visible saturation

Preset Color Temperatures

Color Temperature = WARM (CCT around 5500K)	x = 0.332 ± 0.03 y = 0.348 ± 0.03
Color Temperature = NATIVE (CCT around 6500K)	x = 0.313 ± 0.03 y = 0.329 ± 0.03
Color Temperature = COOL (CCT around 9300K)	x = 0.283 ± 0.03 y = 0.298 ± 0.03

Video Cards Compatibility

Peaking Performance : Peaking is not adjustable

Raster Artifacts

- Video Artifacts : No visible streaking, sag, or smearing artifacts when driven by the specified video cards in the primary mode and after user adjustment to best condition
- Power Supply, and Grounding Artifacts : No visible artifacts in any specified video mode within the horizontal or vertical frequency range of the monitor
- Temperature Drift : Image shall not drift or lose fine-tune adjustment

2-10 MECHANICAL

Desktop

Dimension	418 mm (W) x 408 mm (H) x 184 mm (D) 16.5" (W) x 16.1" (H) x 7.2" (D)
Monitor Weight	4.9 Kg (10.8 lbs)

Head Only / Wall Mount

Dimension	418 mm (W) x 363 mm (H) x 57 mm (D) 16.5" (W) x 14.3" (H) x 2.2" (D)
Monitor Weight	4.6 Kg (10.1 lbs)

Ergonomics

Tilt Up	+15º ±2 º
Tilt Down	-5 º ±2 º

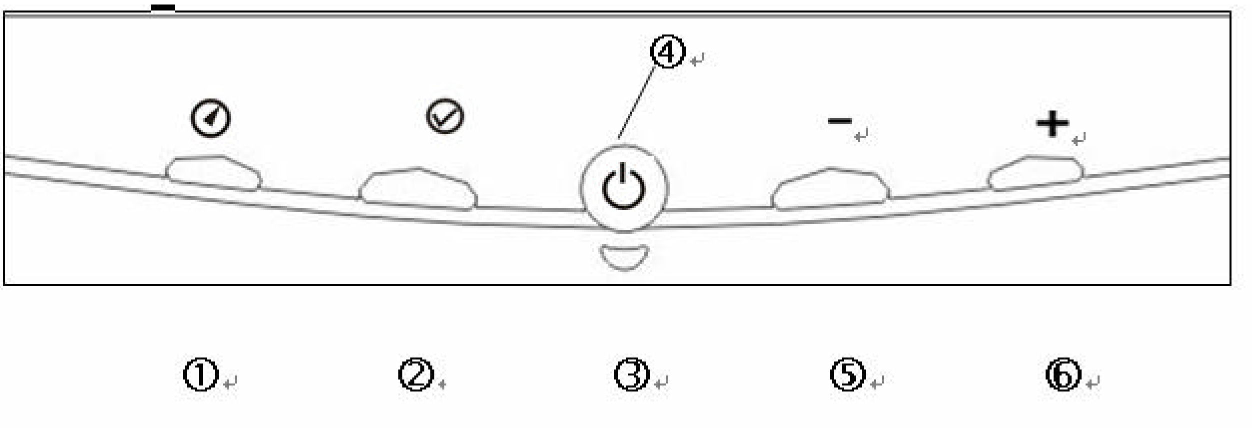
Cabinet Material

Display Head Plastic Material	ABS-94HB
Neck/Base Plastic Material	ABS-94HB
Internal Plastic Cabinet Components	All internal plastic cabinet components shall be in compliance with the requirements of MPR II
Front Bezel Color	The reference for the Front Bezel is the Black color chip provided by ViewSonic The color difference between any two cabinet components shall be less than 0.80 “Delta E”, in the 1976 CIE L*a*b Colorspace.
Neck, Base, Speaker Cover, Rear Cover and Rear Logo Color	The reference for the Neck, Base, Speaker Cover, Rear Cover and Rear Logo is the Black color chip provided by ViewSonic The color difference between any two cabinet components shall be less than 0.80 “Delta E”, in the 1976 CIE L*a*b Colorspace.
Cabinet Color Drift Due To UV-Light	The color drift due to UV-Light shall be less than 3.0 “Delta E” in the 1976 CIE L*a*b colorspace. Testing shall be performed according to the requirements of ASTM Test Method D4459-93.
Cabinet Texture	Mold-Tech # 11010 used on all external textured surfaces.
Samples	The supplier shall submit textured color chips, plastic material specifications, and Material Safety Data Sheets for approval.

3. Front Panel Function Control Description

3.1 Functional Description of Controls

a. User Control Panel



b. Description of Key Functions

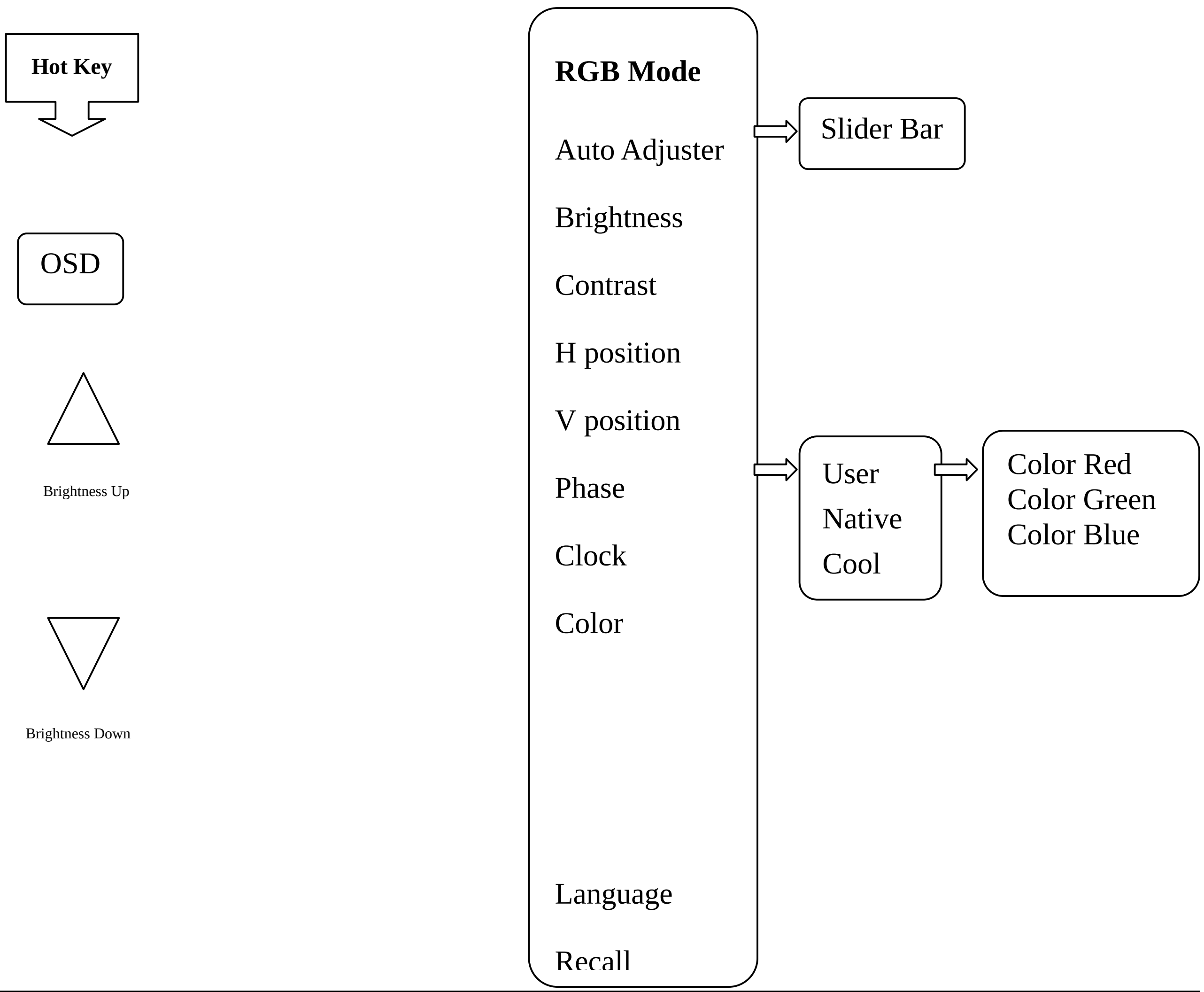
.	Symbol	Function
①		1. Auto-adjust 2. Select the next OSD icon up
②		1. Show the main OSD menu 2. Select the next OSD icon down
③		Power indicator
④		Turn the power on or off
⑤	−	1. Show the mute OSD. 2. Decrease a function's (R G B) value. 3. Move to the next function ( ) left
⑥	+	1. Show the volume OSD menu 2. Increase a function's (R G B) value. 3. Move to the next function ( ) right

3.2 LED Indicator

The Model has one power LED which has two colors, Green and Amber.
LED should have enough luminance for clear viewable.
Some monitor status area indicated by using this LED, as follows:

	Power LED
Normal On	Green
Suspend	Amber
Active Off	Off
Out of Range	Amber
No Input Signal	Amber (OSD ON)

3.3 User Adjustment (At Analog Signal input)



3.4 Specification (at all Present Timing)

a. BRT / CONT:

Picture background shall become brighter with BRIGHTNESS at its MAX position, and shall become darker at its MIN position.

Contrast of picture shall be changed by adjusting contrast value.

b. Adjusted Range for H/V Center : ±10mm or more / ±5mm or more

c. Adjusted Range for H Phase / Pitch : >60 steps / ±50 dots

d. Color : Standard Shipping Condition — Native

Preset Color Mode — Cool, Native, Warm.

User Adjustment Mode — Users can adjust each R or G or B color individually.

Native: x=0.313±0.015;y=0.329±0.015

Cool :x=0.283±0.015;y=0.297±0.015

Warm : x=0.346±0.015;y=0.359±0.015

e. Recall : Recall include Brightness, Contrast, Volume, OSD Position, OSD Time, and execute Auto Adjust.

f. Language: Users can choose one of the eight languages：English, French, German, Spanish and Italian, Russian, Tradition Chinese, Simplify Chinese.

g. Power: Pushing Power button shall cause the monitor to be turned ON and LED to be illuminated.

Pushing Power button again shall cause the monitor to be turned OFF and LED to be OFF.

3.5 Other User/Service Information

a. SIGNAL OVER RANGE:

If the horizontal or vertical or both input signal frequency exceed the acceptable input frequency range, the monitor keeps indicating the "SIGNAL OVER RANGE" as the OSD information after 2 seconds. If both input signal frequencies are in the acceptable frequency range, the monitor puts out the OSD indication and goes back to normal state.

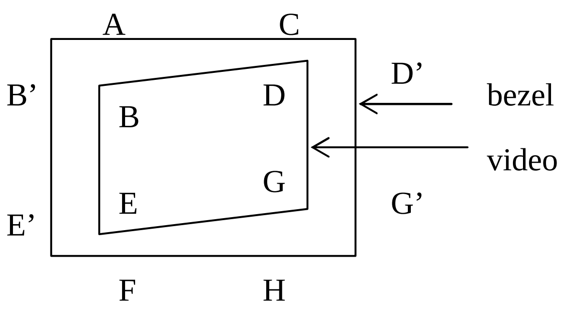
b. RGB NO INPUTSIGNAL:

In case of the pin 14 is +5V, the monitor recognizes PC is connected. Otherwise, the pin 14 is low (approx. 0V), horizontal or vertical input signals are not exist, the monitor displays OSD information 〝RGB NO INPUTSIGNAL〞 5 seconds, then goes to power save.

3.6 Picture Size & Tilt (Primary mode only; to be checked in shipping condition.)

a. Picture Size: ＜All Models＞ Follow Panel Spec.

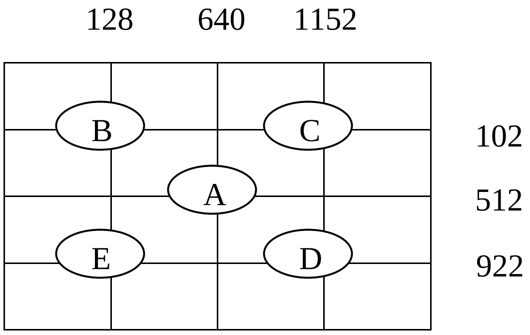
b. Tilt:



| AB- CD| = Tilt on top ≦ 1mm
| EF - GH| = Tilt on bottom ≦ 1mm
| BB'-EE'| ≦ 1mm (at left side)
| DD'-GG'| ≦ 1mm (at right side)

3.7 Brightness Uniformity and Contrast Ratio

a. Brightness Uniformity:



$$\frac{B_{max} - B_{min}}{B_{max}} \leqq 20\%$$

B_{max} = MAX (B_A, B_B, B_C, B_D, B_E)

B_{min} = MIN (B_A, B_B, B_C, B_D, B_E)

B_{ave} = AVE (B_A, B_B, B_C, B_D, B_E)

b. Contrast Ratio:

The contrast ratio is measured at point A and calculated by using the following formula

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance with all pixels in white}}{\text{Luminance with all pixels in black}} \geqq 200$$

（According to HANNSTAR HSD190ME13-A02)

3.8 Shipping Luminance

a. Condition Input signal : Full white pattern

Controls : Color temperature of Office

Cont./Brt. : Default value

Measurement point : One point at the center of the picture.

Warm-up time : 30 minutes.

Color analyzer : CA-210

c. Shipping luminance (center)

Color Temperature	Shipping Luminance
	19”
Native	≧ 200 cd / ㎡

3.9 Maximum / Minimum Luminance

a. Condition Input signal : Full white pattern (Primary mode)

Measurement point : Center of LCD screen

Color Analyzer : CA-210

Maximum : BRT→Max.

CONT→Max.

b. Specification: Native only
(1) ≧200 cd/㎡

3.10 Black Level

a. Gray Scale Condition Input signal: 32 Gray scale (Primary mode)
Controls : CONT./BRT. primary setting, other shipping setting condition.

b. Specification：Native (1) The first bar from black of gray scale pattern shall be cut off.
(2) The last bar from the bright of gray scale pattern shall be discrimination.

3.11 Picture Quality

a. Condition BRT : MIN. ~ MAX.
CONT : MIN. ~ MAX.

*Inspection of picture quality shall be made at the distance of 50 cm in front of LCD surface.

b. Full White Signal
Condition : Input signal – Full white signal
Specification: The following electrical defects shall not be so conspicuous.
(ITU-R 4.5 or better in primary mode, and ITU-R 4.0 or better in other modes)
(2) ringing, seam, etc.
(3) flicker, noise, beat, etc.
(4) shading, etc.
(5) saturation of video power supply, etc.

c. Inverted Crosshatch Signal
Condition : Input signal – Inverted crosshatch signal
Specification: Following electrical defects shall not be so conspicuous.
(ITU-R 4.5 or better in primary mode, and ITU-R 4.0 or better in other modes)
(1) video ringing, over shoot, smear, etc.
(2) vertical jitter, horizontal jitter, picture vibration, etc.

d. Gray Scale Signal
Condition : Input signal – Gray scale signal
Specification: Following electrical defects shall not be so conspicuous.
(ITU-R 4.5 or better in primary mode, and ITU-R 4.0 or better in other modes)
(1) Oscillation, noise, beat, shading, etc.

3.12 EDID DATA

a. Condition : Maintain Mode

b. Specification : FOR RGB

DDC EDID 128 BYTES DATA STRUCTURE

No.	Item	EDID Data or Definition
00	Header	00 FF FF FF FF FF FF 00
08	ID Manufacturer Name	10 8C (DDL)
0A	ID Product Code	00 00 (0)
0C	ID Serial Number	00 00 00 00 (0)
10	Week Of Manufacture	Week of manufacture
11	Year Of Manufacture	Year of manufacture
12	EDID Version,Revision	01 03
14	Video Input Definition	7E(Analog signal,0.700,0.000(0.7 Vp-p),Black-to-Black, ,Separate Syncs, Composite Syncs, Sync on Screen)
15	Max. H. Image Size	25 (37cm)
16	Max. V. Image Size	1E(30cm)
17	Display Transfe Charac.(gamma)	78(2.20)
18	Feature Support(DPMS)	EB(Stand-by,Suspend,Active Off supported,R/G/B color display)
19	Color Characteristics	Per TFT measurement(See NOTE1)
23	Established Timings	AF--(720*480@70Hz) ,(640*480@60Hz),(640*480@72Hz), (640*480@75Hz),(800*600@56Hz),(800*600@60Hz) EF--(800*600@72Hz),(800*600@75Hz),(832*624@75Hz) (1024*768@60Hz),(1024*768@70Hz),(1024*768@75Hz) (1280*1024@75Hz) 00—
26	Standard Timing Identification	81 80—1280*1024@60Hz; 71 4F—1152*864@75Hz z; 81 40--1280*960@75Hz; 31 46—640x480 @66Hz 01 01-- 01 01-- 01 01-- 01 01--
36	Detailed Timing 1 Description	BC 34 00 98 51 00 2A 40 10 90 13 00 78 2D 11 00 00 1E (1280*1024@75Hz,Video Size:376mm*301mm,No Stereo)
48	Detailed Timing 2 Description	00 00 00 FF 00 20 44 44 4C 30 30 30 30 30 20 20 20 20 Monitor S/N: DDL00000
5A	Detailed Timing 3 Description	00 00 00 FD 00 37 4B 1E 50 0E 00 0A 20 20 20 20 20 20 (Vf:55~75Hz,Hf:30~80KHz,Pixel Clock:140MHz)
6C	Detailed Timing 4 Description	00 00 00 FC 00 4C 4D 31 39 30 34 0A 20 20 20 20 20 20 (LM1904)
7E	Extension Flag	00
7F	Checksum	Per DDC Specification

NOTE 1 **Panel Specification (**HSD190ME13**)**

Color characteristics	R: x=0.6475 y=0.3271 G: x=0.2920 y=0.6143 B: x=0.1416 y=0.0791 W: x=0.3096 y=0.3301	Store in EDID data= FD 56 A5 53 4A 9D 24 14 4F 54

4. Circuit Description

A. A/D converters

The ADC is a 7-bit 4-channel analog-to digital converter ,the structure of these ADCS is 7-bit successive approximation ,analog voltage is supplied from external sources to the A/D input pins and the result of the conversion is stored In the 7-bit data latch registers(ADC0_REG~ADC3_REG).The A/D cannels are activated by cleaning the correspondent control bits in the ADC_CON control register, when users write”1” into one of the enable control bits(EN_ADC0~EN-ADC3),its correspondent I/O pin will be switched to the A/D Converter input pin

The conversion will be started by setting STRT_ADC Bit, user can monitor this bit to get the valid A/D channel, its latched data is meaningful, the analog voltage to be measured should be stable during the conversion operation and the variation will not exceed 1 LSB for the best accuracy in measurement

B.Scalling controller

1. VGA front end
   - Built-in triple high speed ADC,PLL for analog RGB input
   - Supports both non-interlaced and interlaced RGB graphic input signals
   - Input signal ranges from 0.55-0.9v
   - Provides RGB analog gain and offset control
   - Support 64 steps (one cycle of pixel)of phase adjust
   - ADC sampling rates are up to 110MHZ for x type, 160MHZ for E type Supports analog SOG input
2. YUV Front End
   - Support ITU-R BT.656 8-bit input
   - Built-in YUV to RGB color space converter
3. Display
   - Supports data swap to fit any panel data alignment for PCB Layout
   - Built in LVDS transmitter
   - Supports spectrum of output clock
4. Hot interface
   - Support serial 2-wire IIC bus
   - Provides 2 channel PMW
5. Power
   - Power supply
   - Less than 1.3W

6. Video processor

- Flexible de-interlacing unit for VGA and digital YUV video input data
- Auto-calibration function for quick vide cantering, clock adjust and phase adjust
- Independent horizontal and vertical zoom in/out algorithm
- Enhanced interpolation algorithm for optimal image quality
- Provides RGB digital gain and offset control
- Dithering function supports 24-bits quality for 18-bit panel
- SRGB matrix mapping support
- 10-bit programmable gamma table for panel compensation
- Supports Hue and saturation adjustment
- Built-in POST pattern

Timing controller

- Support RSDS output
- Provides 4 differential data pairs to support 6 or 8-bit RGB data bus
- 10 General Purpose output allow suitability to different production environments
- Provide single pixel (18-24-bit) or dual pixel (36-48-bit)
- Programmable RSDS swing level
- Supports line offset function for two bank system panel
- 12 GPO internal controls 10 GPO external pin outputs
- Supports data swap to fit any panel data alignment for PCD layout

Sync Processor

- Supports separate, composite and TTL-level sync-on-Green (SOG) sync input
- Polarity detection for HSYNCI and VSYNCI
- Fast mode change detection function

Pin description

Pin No.	Name	Type	Description
1	NC	I	Connect to ground in normal operation
2	NC	I	Connect to ground in normal operation
3	PLL_VAA	P	ADC PLL analog power
4	VREF	P	External reference voltage of 2.5V
5	TESTP	O	VGA output test pin
6	BGNDA2	P	B channel analog ground
7	BVAA2	P	B channel analog power
8	ADC_BVAA	P	ADC analog power for B channel
9	ADC_BGNDA	P	ADC analog ground for B channel
10	BIN+	I	B channel positive analog video input
11	BIN-	I	B channel negative analog video input
12	GGNDA2	P	G channel analog ground
13	GVAA2	P	G channel analog power
14	ADC_GVAA	P	ADC analog power for G channel
15	ADC_GGNDA	P	ADC analog ground for G channel
16	SOGI	I	VGA port Sync On Green input with smith trigger
17	GIN+	I	G channel positive analog video input
18	GIN-	I	G channel negative analog video input
19	RGNDA2	P	R channel analog ground
20	RVAA2	P	R channel analog power
21	ADC_RVAA	P	ADC analog power for R channel
22	ADC_RGNDA	P	ADC analog ground for R channel
23	RIN+	I	R channel positive analog video input
24	RIN-	I	R channel negative analog video input
25	ADC_VAA	P	ADC power
26	ADC_GNDA	P	ADC ground
27	CGND	P	Core digital ground
28-35	Y0 ~ Y7	I	Video data input of bit 0~7 Y7/DE,Y6/VS,Y5/HS (function selected by P0-CR:E5)
36	YUV_CLK/D_CLK	I	Video port clock input Digital clock input
37	DVDD	P	Display digital power supply
38	CVDD	P	Core digital power supply
39-46	BB0 ~ BB7 /(BRSB0 ~ BRSB3) /(DBIN0 ~ DBIN7)	O /O /I	TTL mode: Port B, B channel output RSDS mode: Port B, B channel output Digital mode: Digital B channel data input
47	DGND	P	Display digital Ground
48-55	GB0 ~ GB7 /(BRSG0 ~ BRSG3) /(DGIN0 ~ DGIN7)	O /O /I	TTL mode: Port B, G channel output RSDS mode: Port B, G channel output Digital mode: Digital G channel data input
56	DVDD	P	Display digital power supply

57-64	RB0 ~ RB7 /(BRSR0 ~ BRSR3) /(DRIN0 ~ DRIN7)	O /O /I	TTL mode: Port B, R channel output RSDS mode: Port B, R channel output Digital mode: Digital R channel data input
65	POLB/BRSCLKP	O	TTL mode: Port B data invert indicate output RSDS mode: Port B clock positive output
66	CLKB/BRSCLKN	O	TTL mode: Port B clock output RSDS mode: Port B clock negative output
67	DISP_VS/SPB	O	SC mode: Display V-sync signal output TC mode: Display Start Pulse B
68	DISP_HS/GPO1	O	SC mode: Display H-sync signal output TC mode: GPO1
69	DISP_DE/SPA	O	SC mode: Display Data-Enable signal output TC mode: Display Start Pulse A
70	DPLL_GND	P	LVDS PLL ground
71	DPLL_VDD	P	LVDS power supply
72	DGND	P	Display Digital Ground
73	T7P/CLKA/ARSCLK _N	O	TTL mode: Port A clock output RSDS mode: Port A clock negative output LVDS mode: LVDS pair 7 positive output
74	T7M/POLA/ ARSCLK_P	O	TTL mode: Port A data invert indicate output RSDS mode: Port A clock positive output LVDS mode: LVDS pair 7 negative output
75-82	RA7 ~ RA0 /(ARSR3 ~ ARSR0) /(TCLK2/T6 ~ T4)	O	TTL mode: Port A R channel output RSDS mode: Port A R channel output LVDS mode: LVDS pair 4-6 output Clock pair 2 output
83	LVDS_VCC	P	LVDS Interface Power supply
84	LVDS_GND	P	LVDS Interface Ground
85	DVDD	P	Display digital power supply
86-93	GA7 ~ GA0 /(ARSG3 ~ ARDG0) /(T3/TCLK1/T2 ~ T1)	O	TTL mode: Port A G channel output RSDS mode: Port A G channel output LVDS mode: LVDS pair 1-3 output Clock pair 1 output
94	DGND	P	Display digital ground
95-96	BA7 ~ BA6 /(ARSB3) /(T0)	O	TTL mode: Port A B channel output RSDS mode: Port A B channel output LVDS mode: LVDS pair 0 output
97-102	BA5 ~ BA0 /(ARSB2 ~ ARSB0)	O	TTL mode: Port A B channel output RSDS mode: Port A B channel output
103	DVDD	P	Display digital power supply
104	CVDD	P	Core digital power supply
105	DGND	P	Display digital ground
106	RSTn	I	System reset
107	SDA	I/O	Host interface serial data in/out incorporate smith trigger
108	SCL	I	Host interface serial clock incorporate smith trigger buffer &

			spike filter.
109	IRQn	O	Interrupt request output
110	MD1/GPO9	I/O	Host slave address select of Bit2 General purpose output port 9
111	MD0/GPO8	I/O	Host slave address select of Bit1 General purpose output port 8
112	GPO7	O	General purpose output port 7
113	VSO/GPO6	O	Capture V sync output General purpose output port 6 (function select by P0-CR:D5.3)
114	HSO/GPO5	O	Capture H sync output General purpose output port 5 (function select by P0-CR:D5.2)
115	PWM1/GPO4	O	Pulse Width Modulation output port 1 General purpose output port 4 (function select by P0-CR:D5.1)
116	PWM0/GPO3	O	Pulse Width Modulation output port 0 General purpose output port 3 (function select by P0-CR:D5.0)
117	D_DE/GPO2	I/O	Digital port data enable signal Input General purpose output port 2 (function select by P0-CR:08.4)
118	DVDD	P	Display digital power supply
119	VSYNCI	I	VGA port vertical sync input
120	CVDD	P	HPLL core digital power supply
121	X'TALI	I	Crystal Input
122	X'TALO	O	Crystal output
123	CGND	P	HPLL core logic ground
124	12M/GPO0	I/O	12M clock output or GPO0 General purpose output port 0 (function select by P0-CR:D5.5)
125	PLL_GND	P	ADC PLL digital ground
	PLL_GND	P	ADC PLL digital ground
126	HSYNCI	I	VGA port horizontal sync input
127	PLL_VDD	P	ADC PLL digital power
128	PLL_GNDA	P	ADC PLL analog ground

C.NT68521

The NT68521 is a high quality image and highly integrated LCD controller, it combines a triple ADC, scaling engine, OSD, LVDS and timing controller

The ADC supporter up to 160MHZ pixel rate and built-in a low jitter digital for sampling input video that provides more stabile ,clear data for display,

The NT68521 Built-in DSP engine execute image zoom-in, zoom out function, the zoom feature provides linear scaling up/down that makes it easier to fit different panel resolutions

The OSD provides a bit map,multi-color RAM front that is more flexible to create the customer's OSD the output provides multi-interface and for general panel solutions ,the display provides LVDS interface

The NT68521 also has a built-in spread spectrum feature to provide low EMI solutions ,SRGB for video color space convert ,post pattern for manufacturing test ,de-interlace feature receives interlace video input and display on TFT panels

5. Adjustment Procedure

1. Function test

1.1 products

19” LCD Monitor

1.2 test equipment

(2-1). One PC (Windows system);two RS-232 PORT，COM1: signal resolution、COM2: color meter。

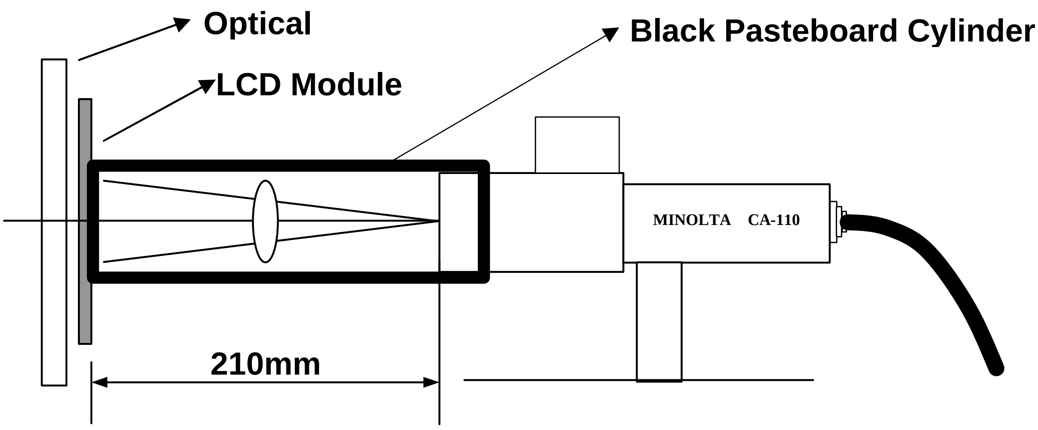
Print PORT: connection with IIC/RS-232 Adapter Board

(2-2).Color Meter: MINOLTA. CA-110 is 21cm apart form the screen (eg: BM-7 distance is 50cm; Field = 2.0)

(2-3). IIC/RS-232 Adapter Board (Set IIC Port)

(2-4). (TOPCON BM-7 or CA110) will be upright with Monitor

(2-5).each equipment’s connection circuit diagram, pls see the appendix two and three.



(3).Setup

(3-1).with 32 level gray scale Pattern

(3- 2).Brightness Set 50; Contrast Set 50.

(3-3). Auto White Balance:

Entered into Maintain mode then choose Menu (F199N) Icon ,and press (+) Key to enter into Maintain Menu; choose Auto Color ,press down (+) Key to implement Auto Color Adjust。

(4).adjust specification:

At Brightness=50, Contrast=50 Full White Pattern

6500°K: x=0.313±0.015;y=0.329±0.015

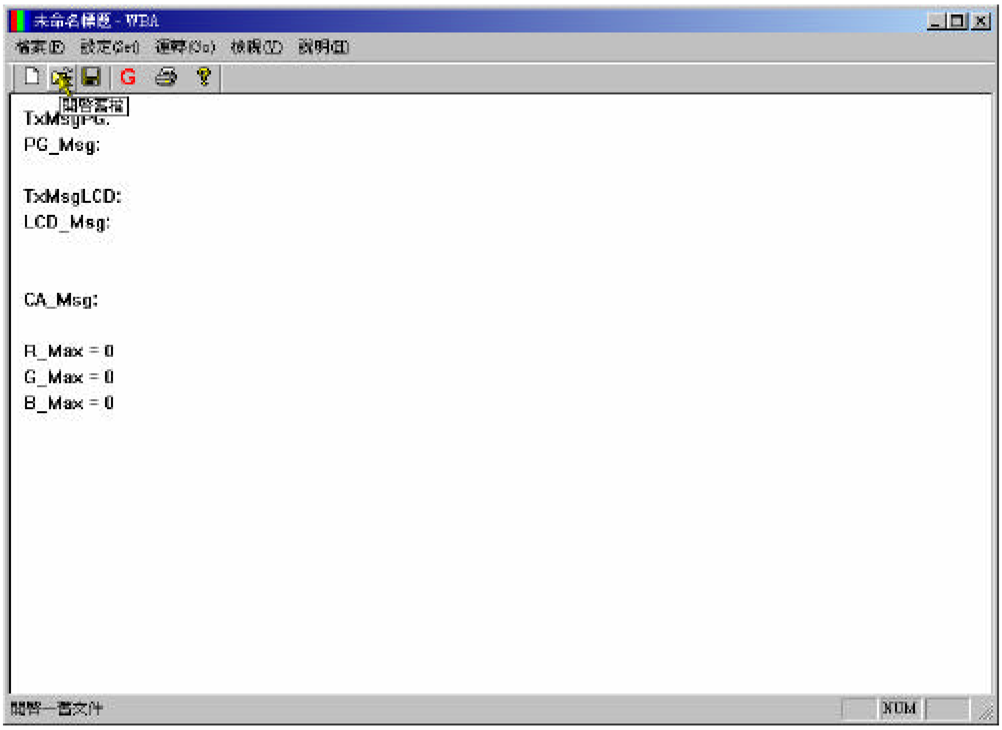
9300°K: x=0.283±0.015;y=0.297±0.015

S RGBK : x=0.313±0.015;y=0.329±0.015

Brightness=50，Contrast=50 Full White ≧180 CD/M^2

(5). Applicable program exercitation (use the color temperature adjust program to adjust color temperature)

(5- 1).WBA.exe, enter the pattern as follow:

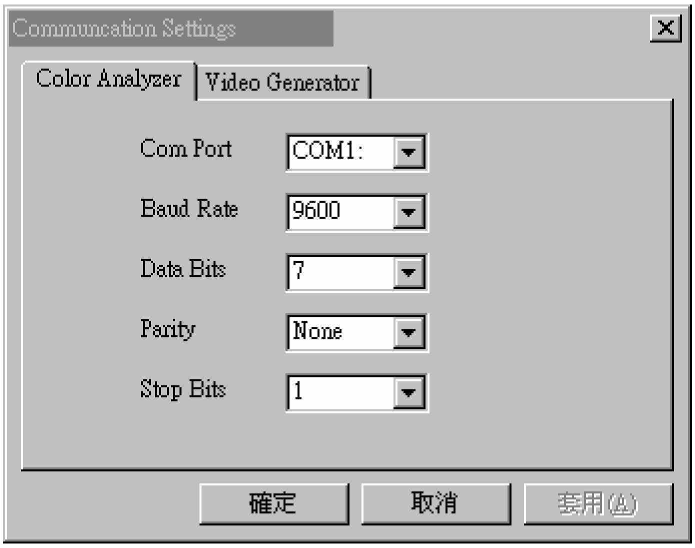


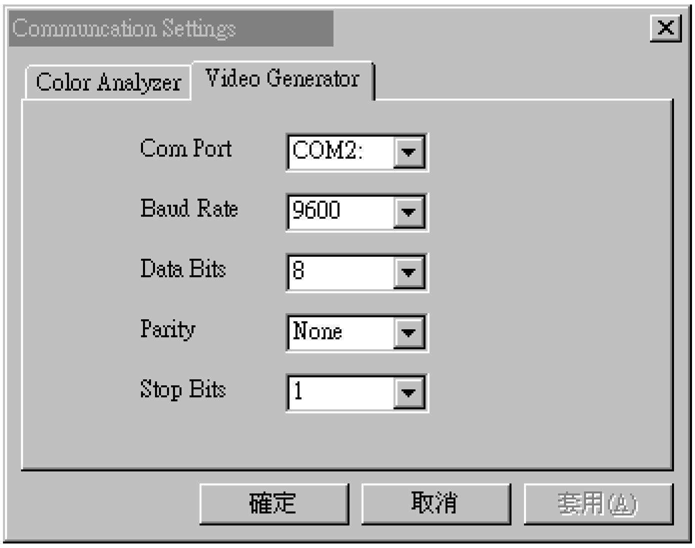
(5- 2).at this time .pls press the open document as follow, choose the project document and press the open button, the pattern is as follow

note: pls choose the related program depending on the model and panel of the product



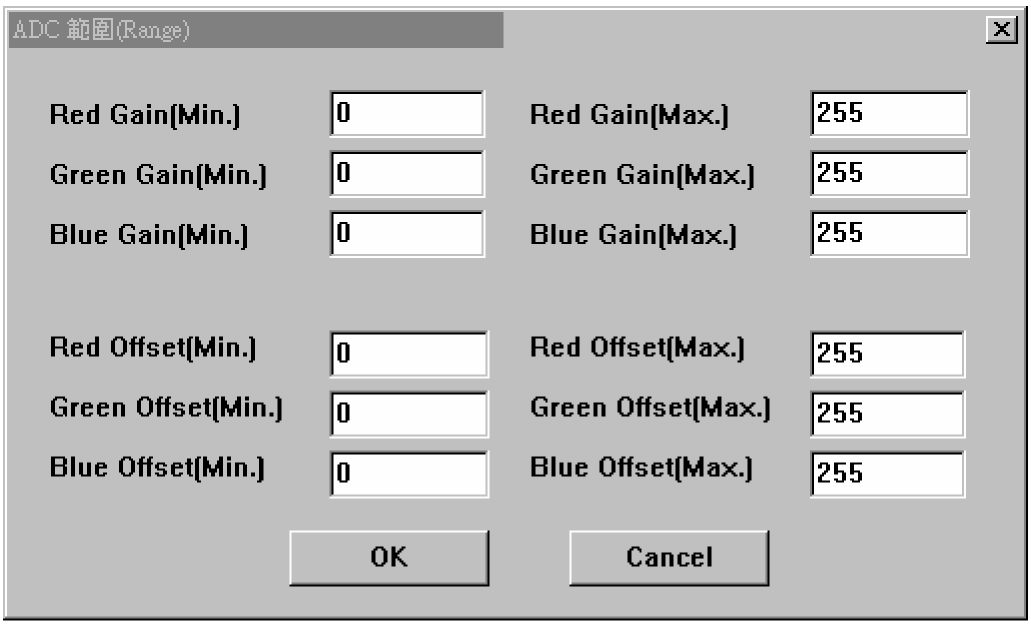
(5-3).pls choose" (Set)"→"Communication", should alter the communication setup,the patter is As follow:



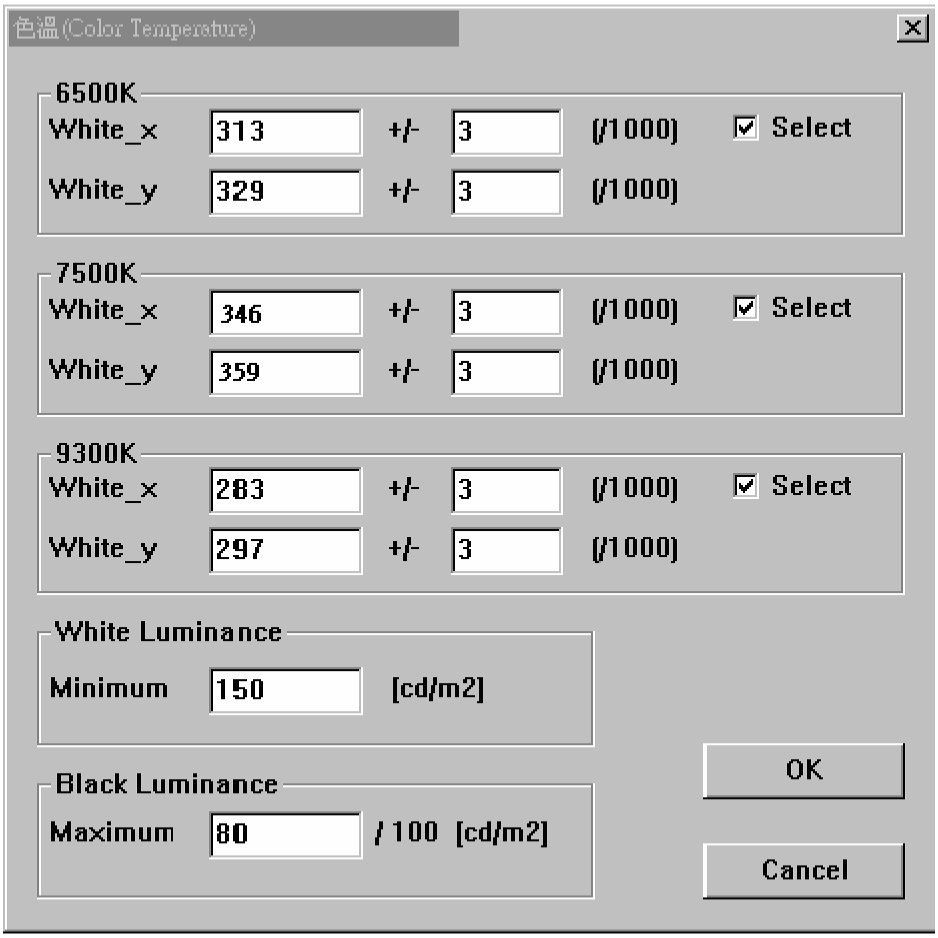


(5-4). Pls select" Set"→"Range", ADC setup range, pattern is as follow:

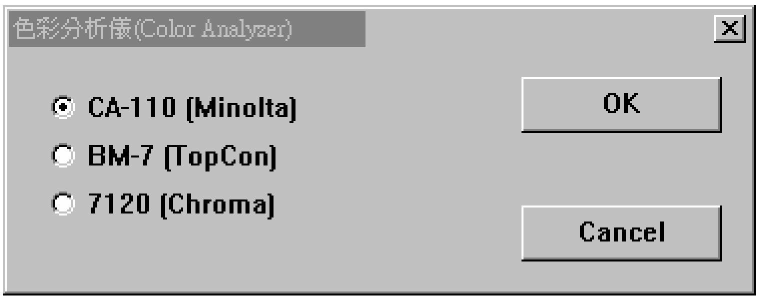
LM1901XXND: **Gain 0 ~ 255 Offset 0 ~ 255**



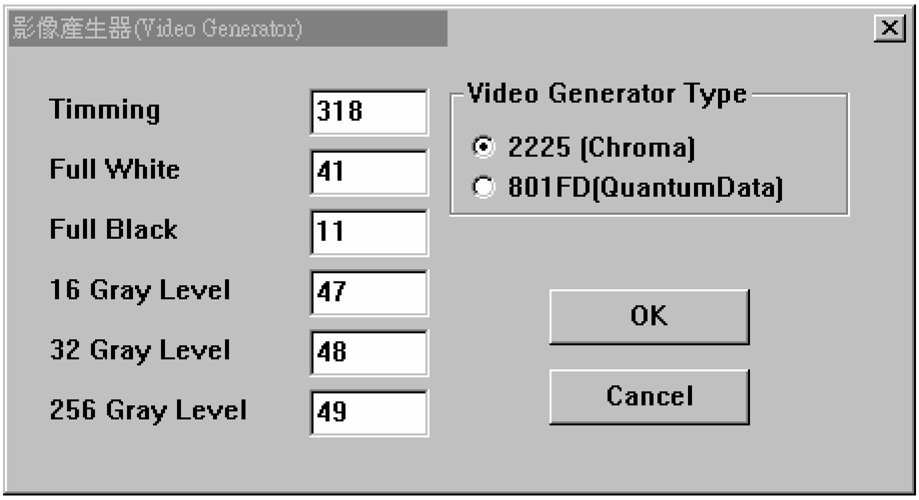
(5-5). Pls select"(Set)"→"Color Temperature" setup the color temperature specification, the 7500K of the program is"SRGB"color temperature ,pattern as follow:advise the adjust tolerance will be ±3



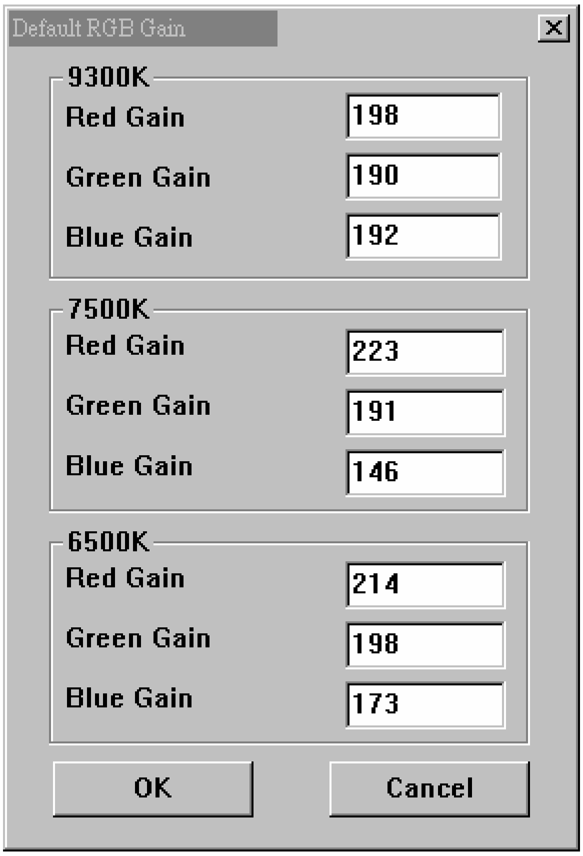
(5-6). Pls select" Set"→"Color Analyzer" setup color analysis fixture Type,at present we can Use CA-110 and BM-7. Chroma7120,the pattern as follow:



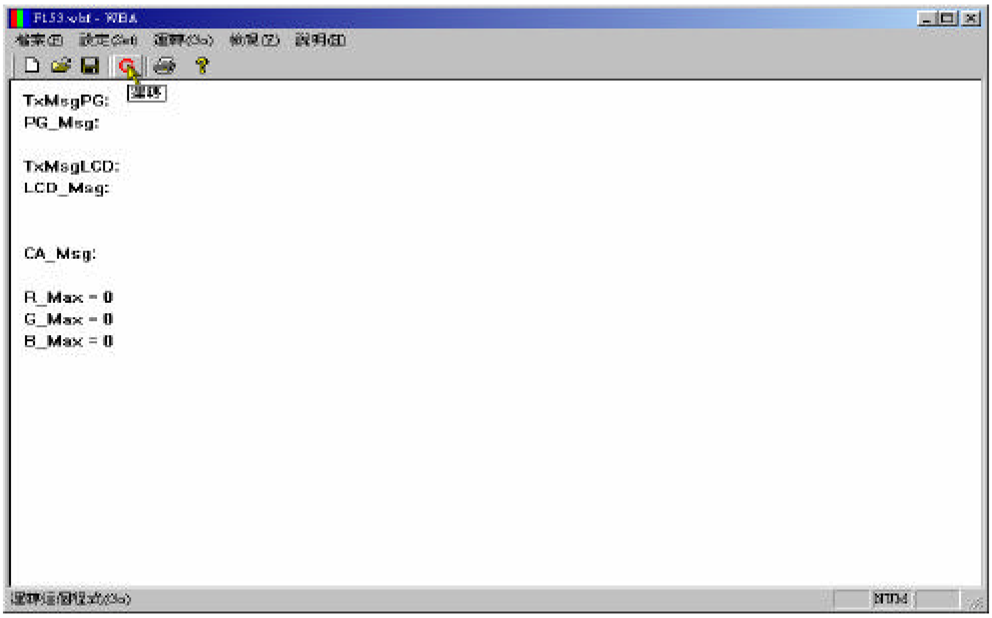
(5-7). Pls select” Set”→”Video Generator” to set the signal generator’s Type and Timing/Pattern, refer to the pattern as follow:



(5-8) pls select ”Set”→”Default RGB Gain



(5-9). Begin to adjust;pls press the tools menu Icon, Icon, at this time the program will go on the color temperature adjusting, refer to the pattern as follow.



(6).when adjusting the color tempreture,after the auto adjust, you must save the document and then turn

On the machine, test the color and temperature:

6500°K: x=0.313±0.015;y=0.329±0.015

9300°K: x=0.283±0.015;y=0.297±0.015

SRGB : x=0.313±0.015;y=0.329±0.015

(7).POWER SAVING& power test：INPUT 1280x1024 @75Hz FULL WHITE, insert the signal to D-SUB&DVI . CHECK whether the POWER SAVING is normal, POWER SAVING LED whether the dark orange light is normal and the power is within the specification.

(8).gray scale test：Input1280x1024 @75HZ 32 gray scale pattern

Before check the patter、at first execute auto adjust once based on contrast DAC 0 100 display

The gray scale should be evidently, on the contrary, when it died down and the pattern will be darker and darker。

(9).DDC LOAD: pls select corresponding Model’s DDC document as the loading

2. Firmware and EDID upgrade/update Methods

. MCU software written:

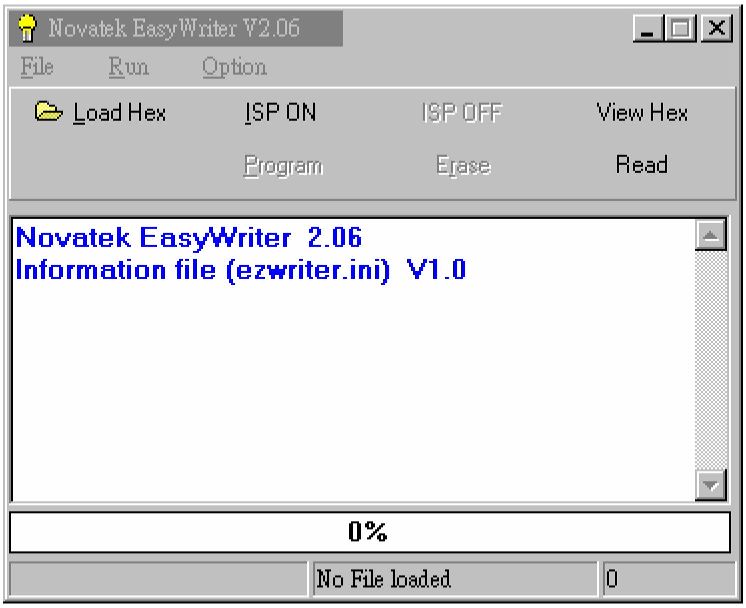
2-1. Used equipment:

(1).one PC (Windows system),one Print PORT: connect withIIC/RS-232 Adapter Board

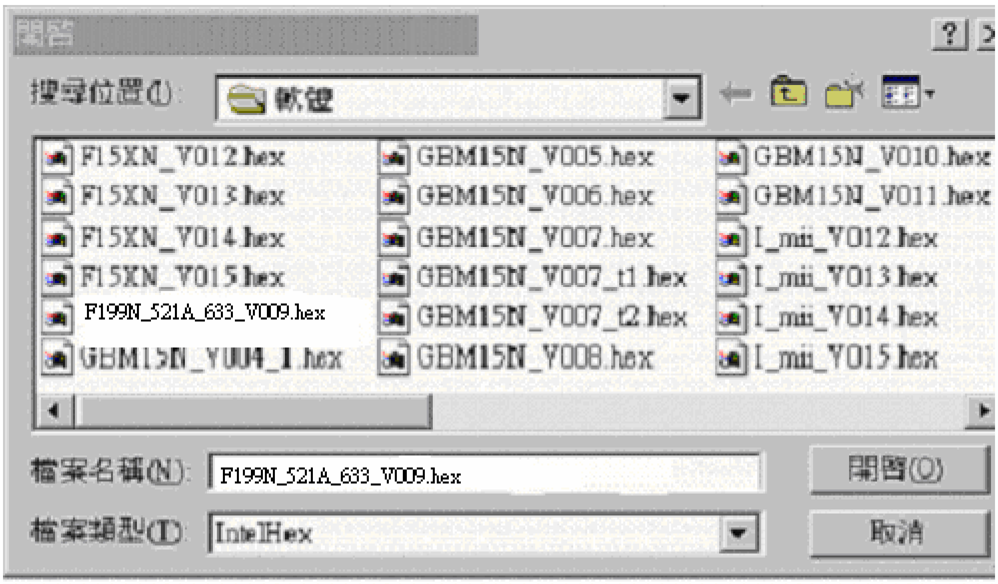
(2). IIC/RS-232 Adapter Board(Set IIC Port)

2-2. applicable program operate:

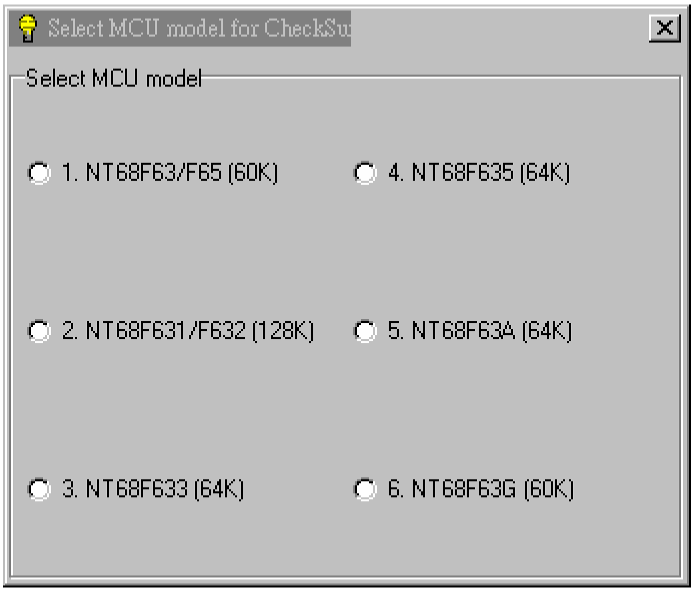
(1).execute Writer.exe to enter the pattern as follow



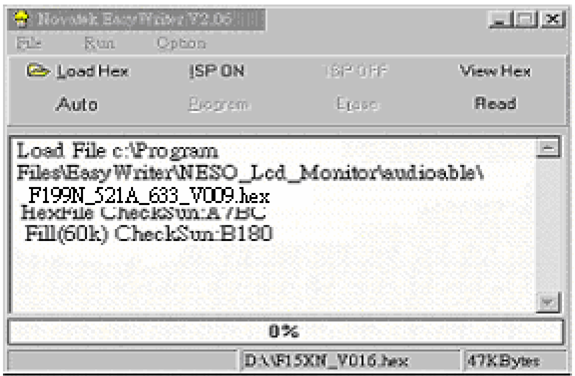
(2). Then pls press Load Hex document as follow



(3) after opening the Hex document that you choose,pls select the NT68F633 (64K)



(4) begin to load MCU software: after press" AUTO", then at this time will be loading the MCU software,pls see the pattern as follow:



2. I/P 1280x1024 @75Hz CROSS TALK (PATTERN63) FH=79KHz,FV=75Hz

2-1.input the signal to D-SUB to execute AUTO ADJUSTING function, then CHECK the pattern whether have interaction noise.(if still have noise ,we can slightly adjust the clock or phase menu)

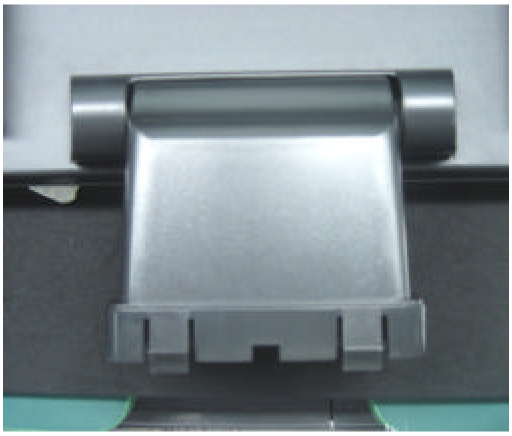
2-2. I/P1280x1024 @75Hz 32 Gray pattern (PATTERN48) CHECK the pattern can't lack of color or Have too much color.

2-3 TIMING CHECK

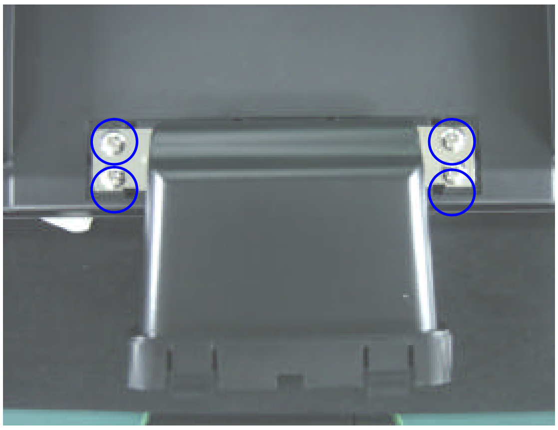
640x480@60/66/72/75Hz	**800x600@56/60/72/75Hz**
1024x768@60/70/75Hz	**1280x1024@60/75Hz**
832x624@75Hz	**1152x864@75Hz**
1280x960@60Hz	**720x400@70Hz**

3 Disassembly Procedure

1.Remove the hinge cover



2.Unscrew 8 pcs screws



3.Unscrew 2 pcs screws





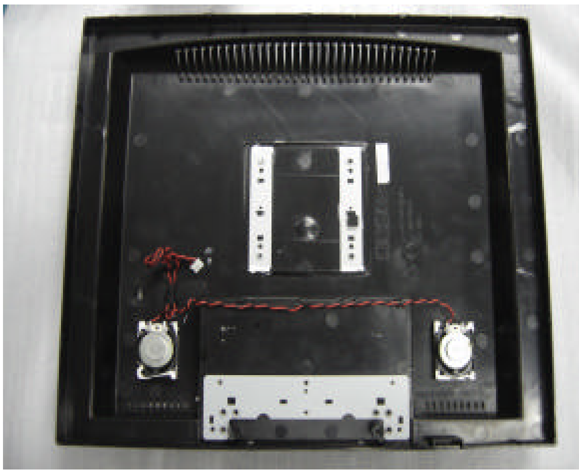
4. Insert plastic flake to hole ,and pull the flake along the gap between the bezel and housing, to separate the housing from bezel.



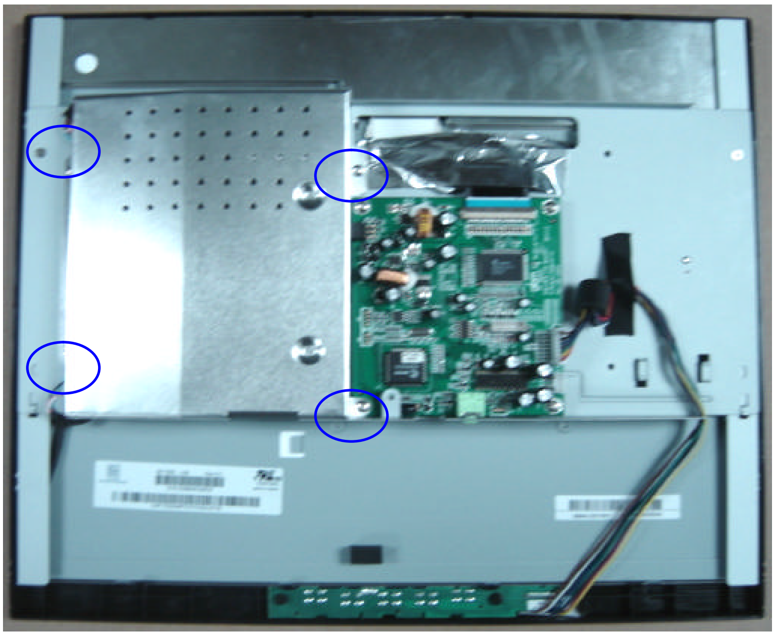
5. Pull out the speaker waire from the main board



6 Take out **housing** part;

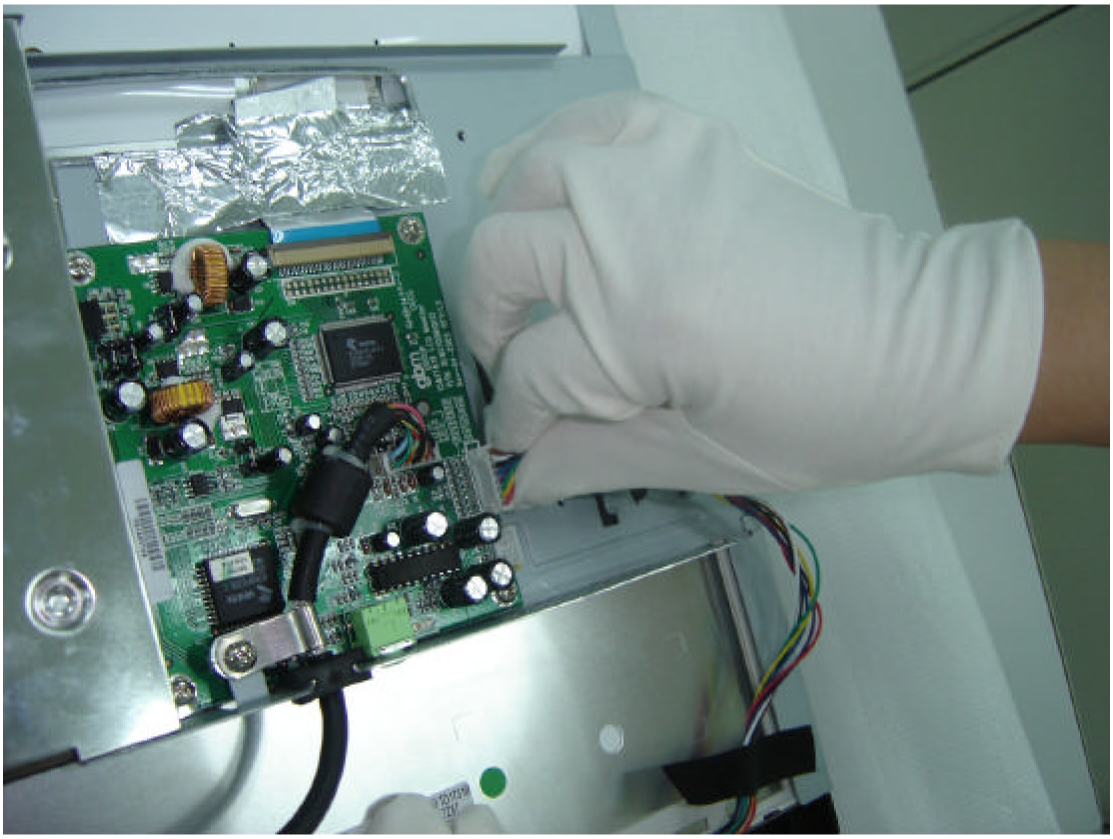


7 Remove 4pcs screw,take out ;

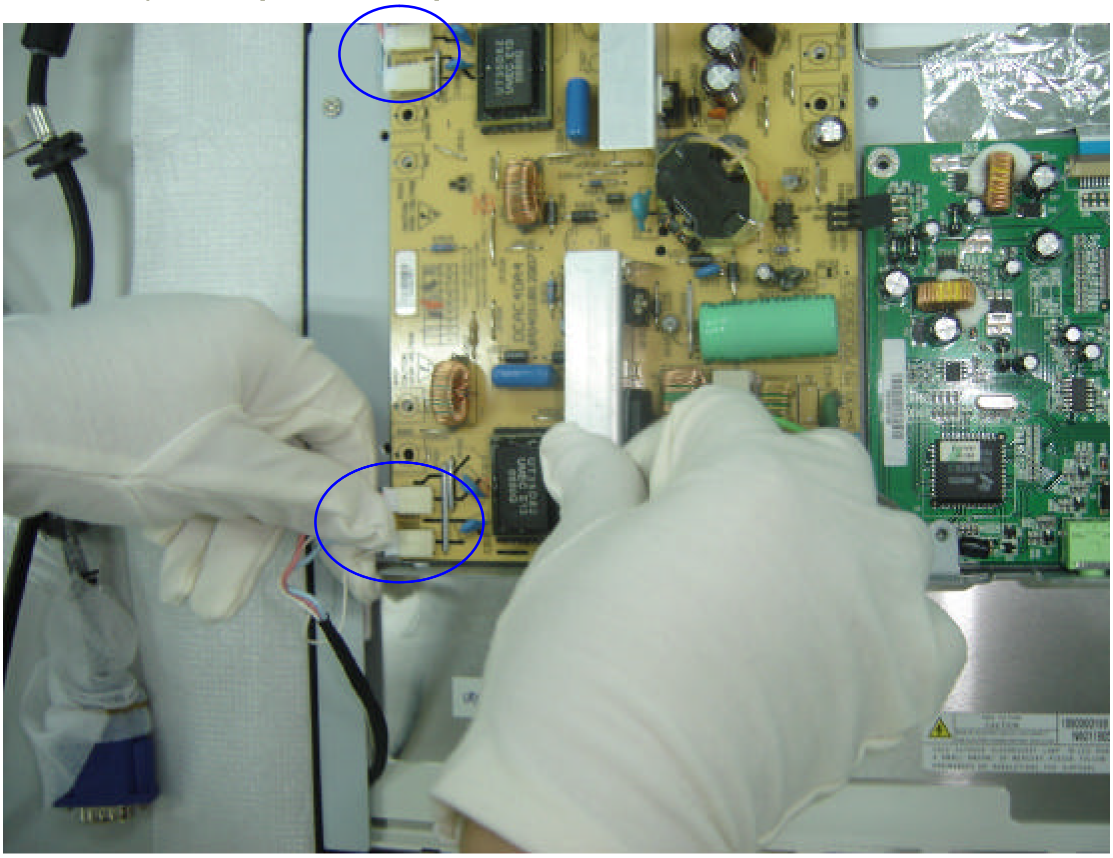




8． Remove the **earth screw**,push up the **signal cabl**e from the **frame**, pull up signal cable connecter from the **main board** ;



9 Pull out the 4pcs **lamp wir**e from **power board;**



10 Unscrew 4pcs screw;

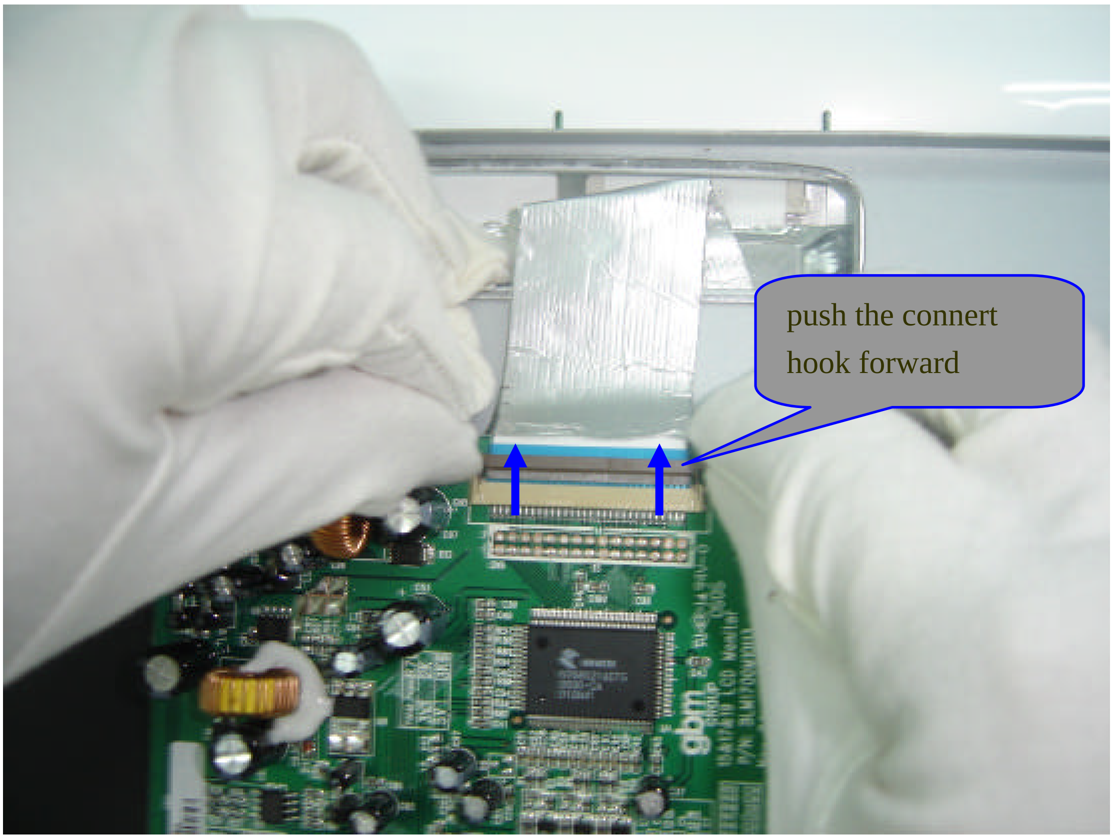


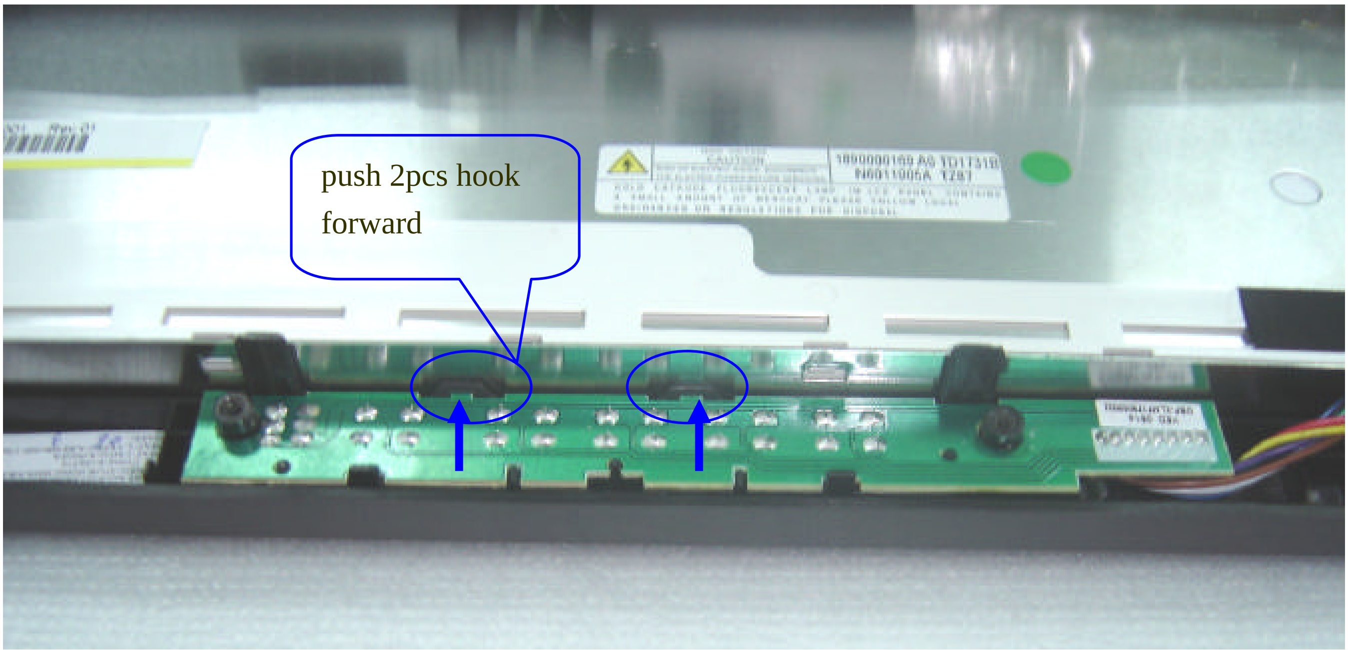
11 Take the power board up from the frame;



12. Tear off the **aluminum foil** where cover the **FFC cabl**e,push the connert hook forward ,pull out FFC cable from the main board;

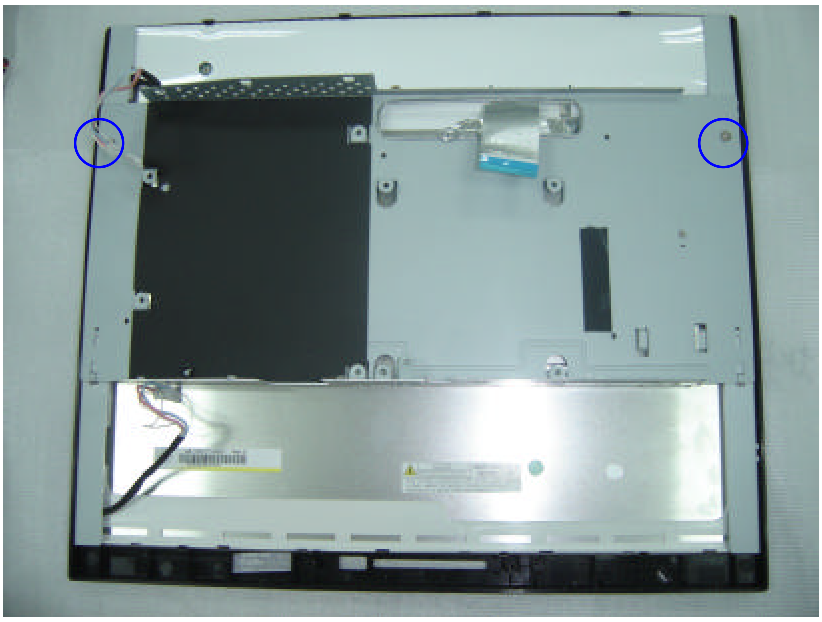


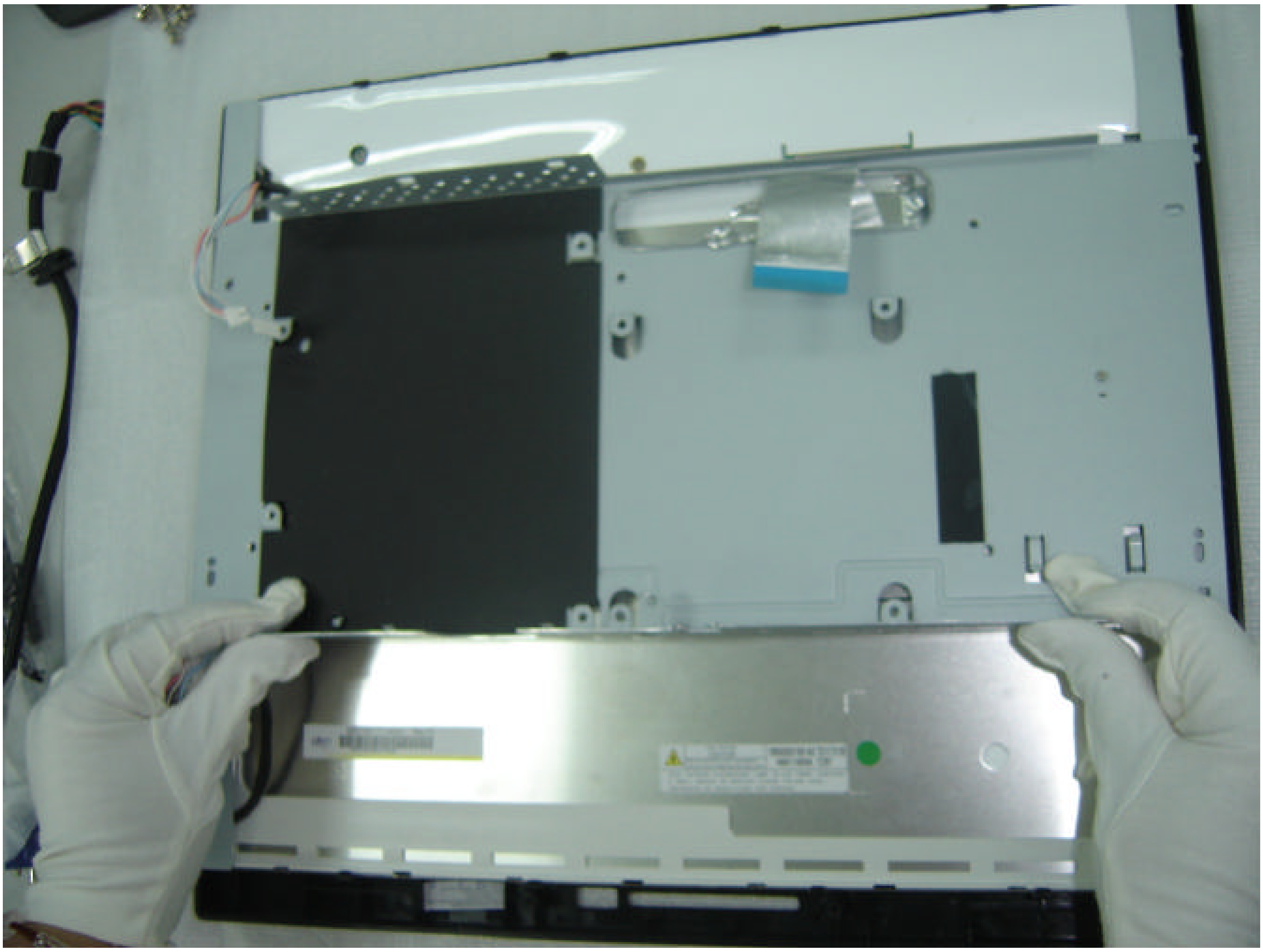


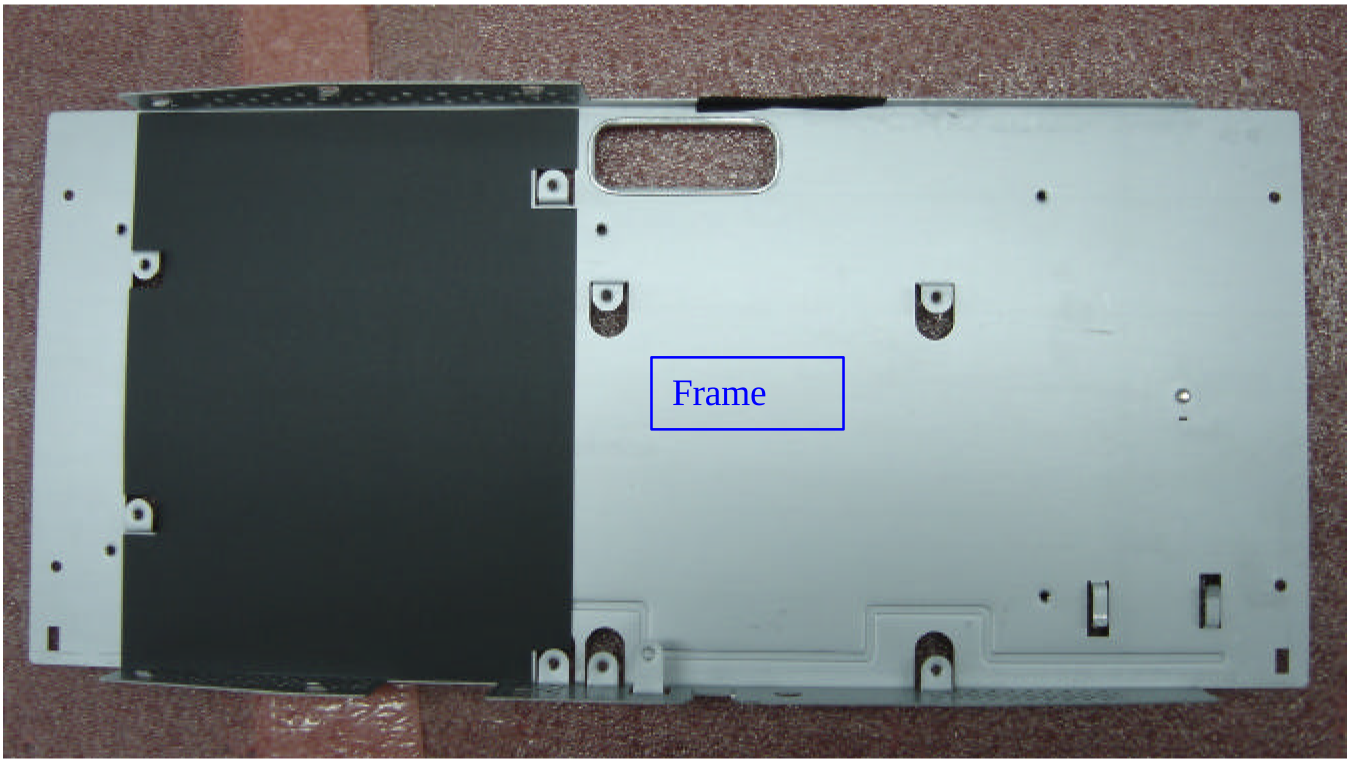

push 2pcs hook
forward



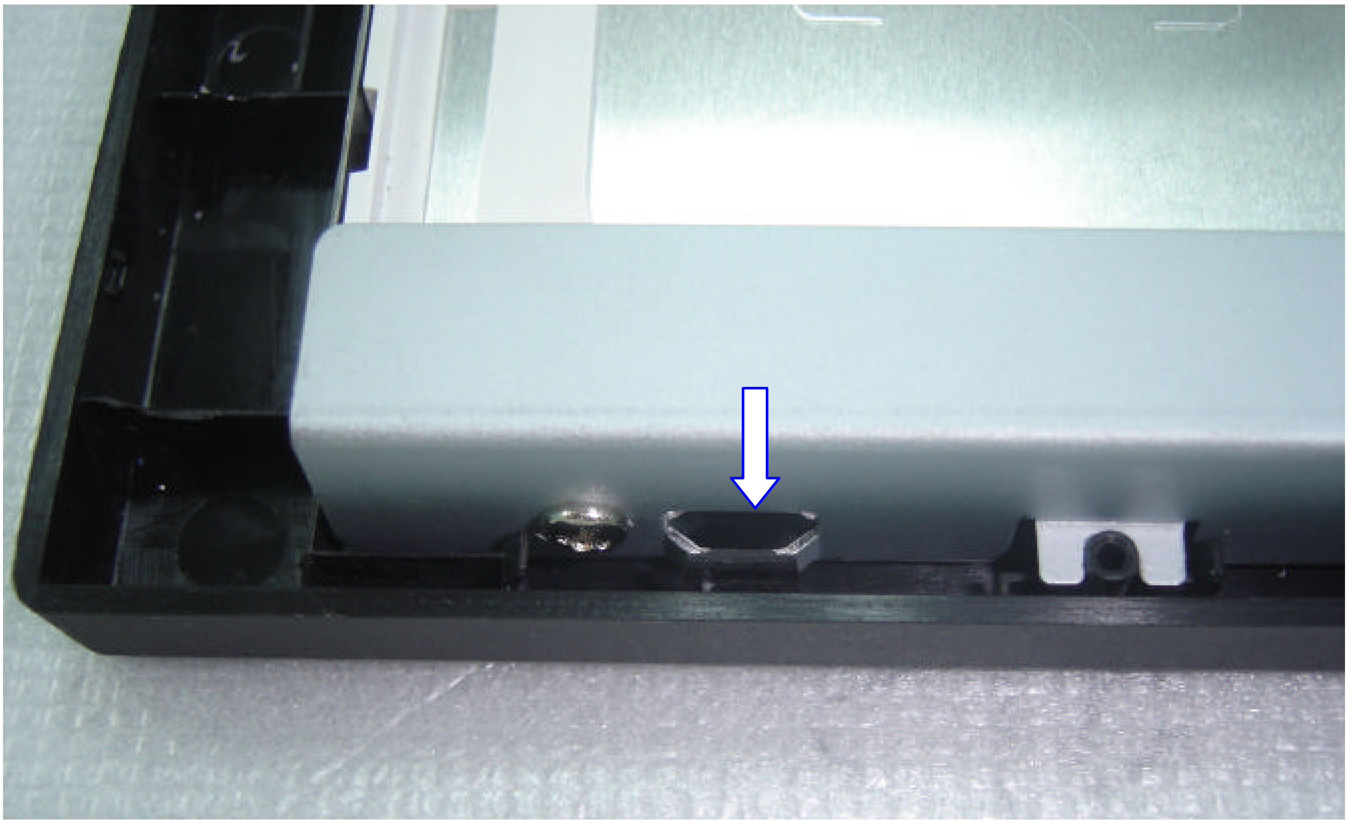
15. Unscrew 2 pcs screws







16. Release all hooks around the Panel for remove the bezel;



17. Remove bezel from the panel;



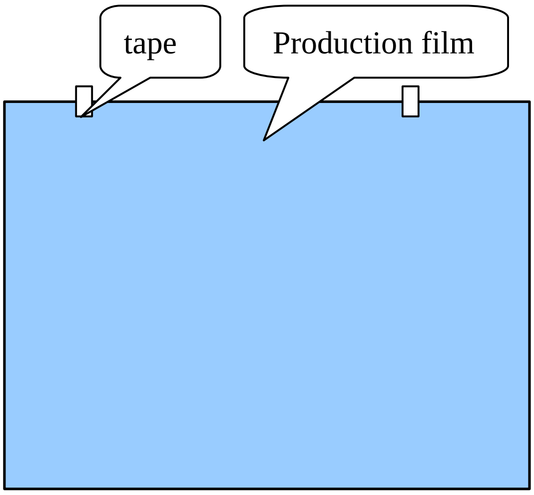
18. Unscrew 2pcs screw with at the panel side

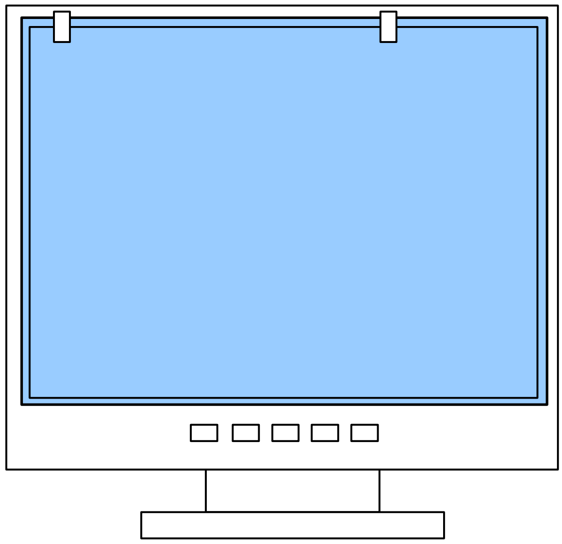




4 Packing Procedure

1.1 Paste production film to protect the monitor screen.(Figure 1)



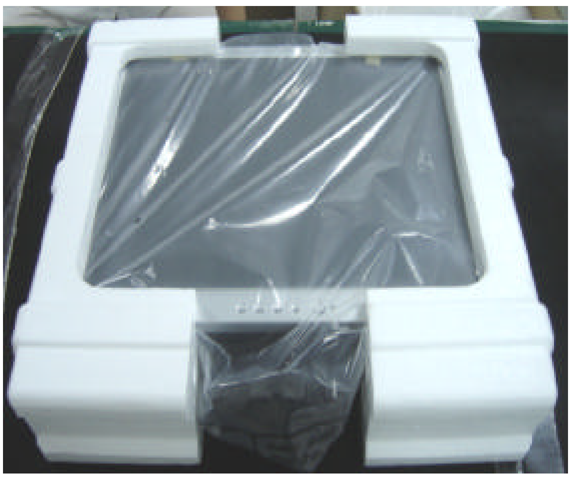


1.2 Put the monitor in the PE bag and seal bag with type (Figure 2)





1.3 Put the cushions on the monitor.(Figure 4)





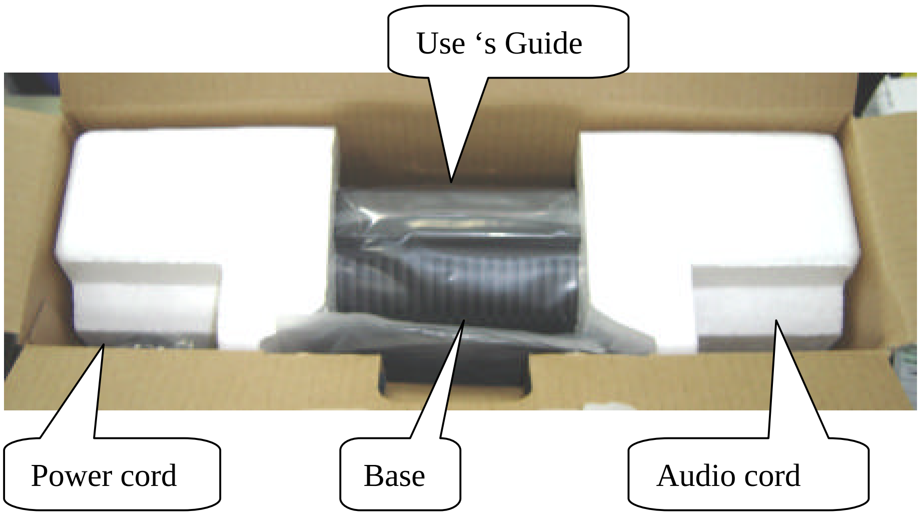
1.4 Put the base in the EPE bag. and then,place the base on the cushions ,as figure





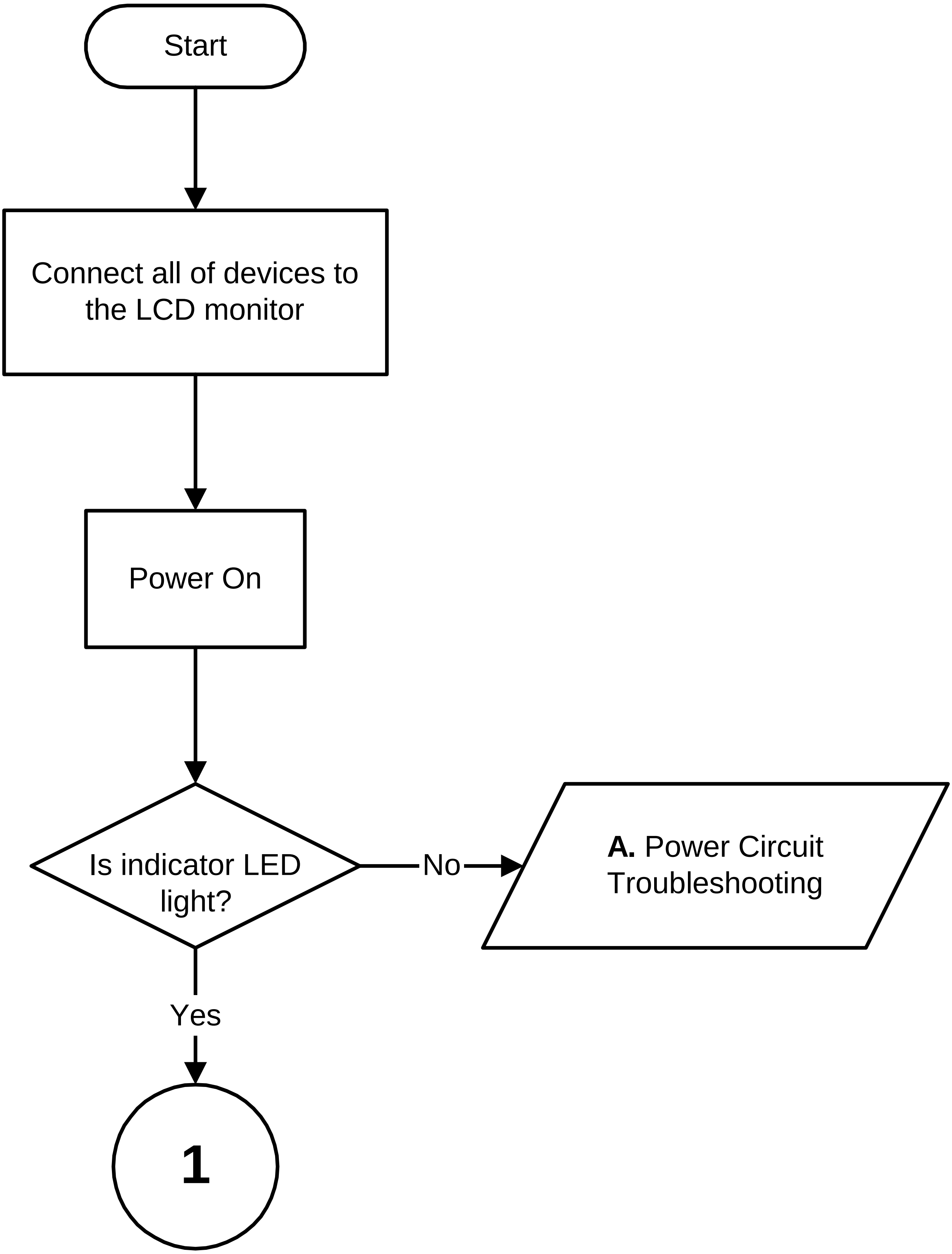


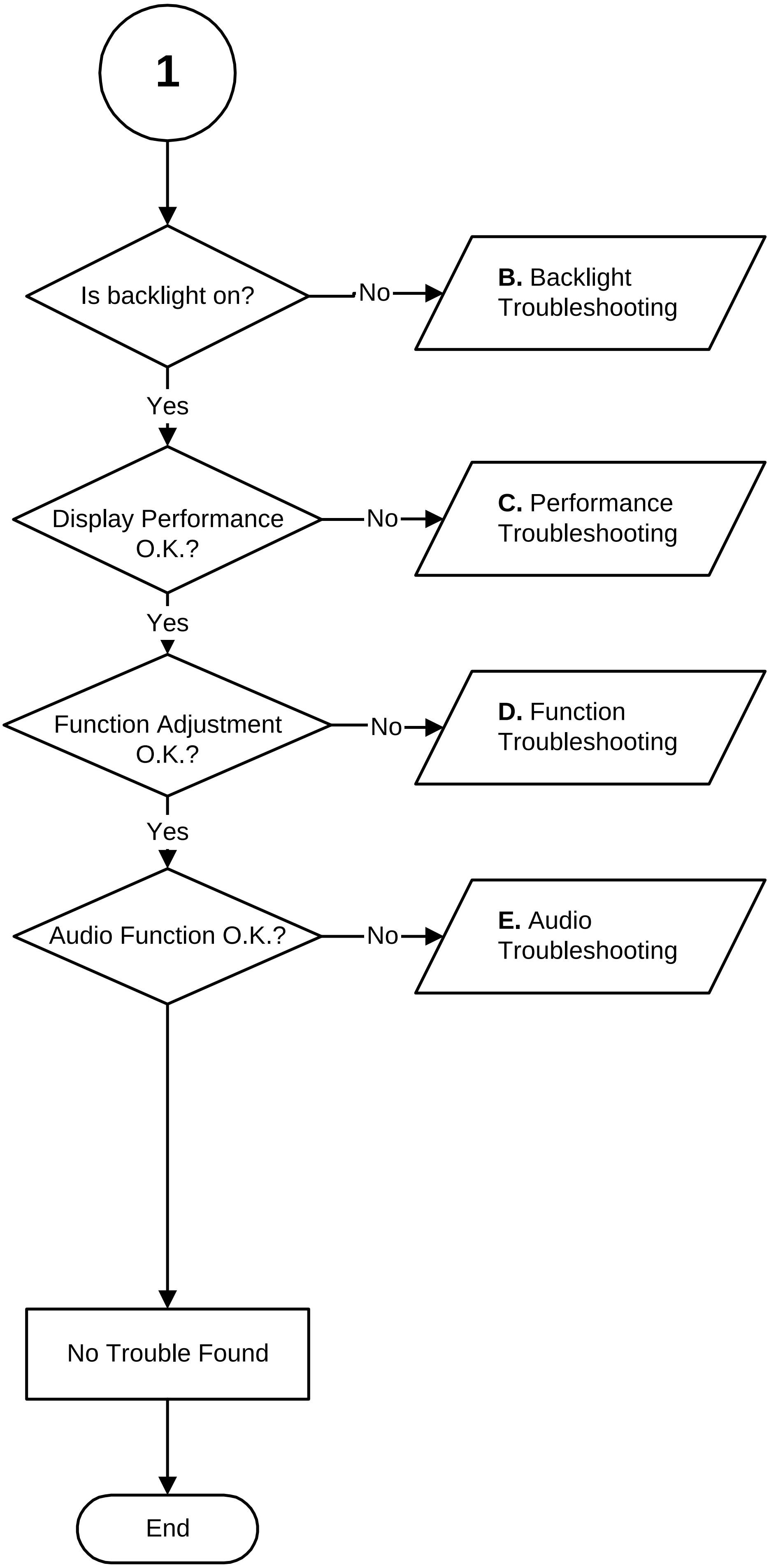
1.5 Place the monitor into the carton and then put all accessories into carton .At last, close the carton.



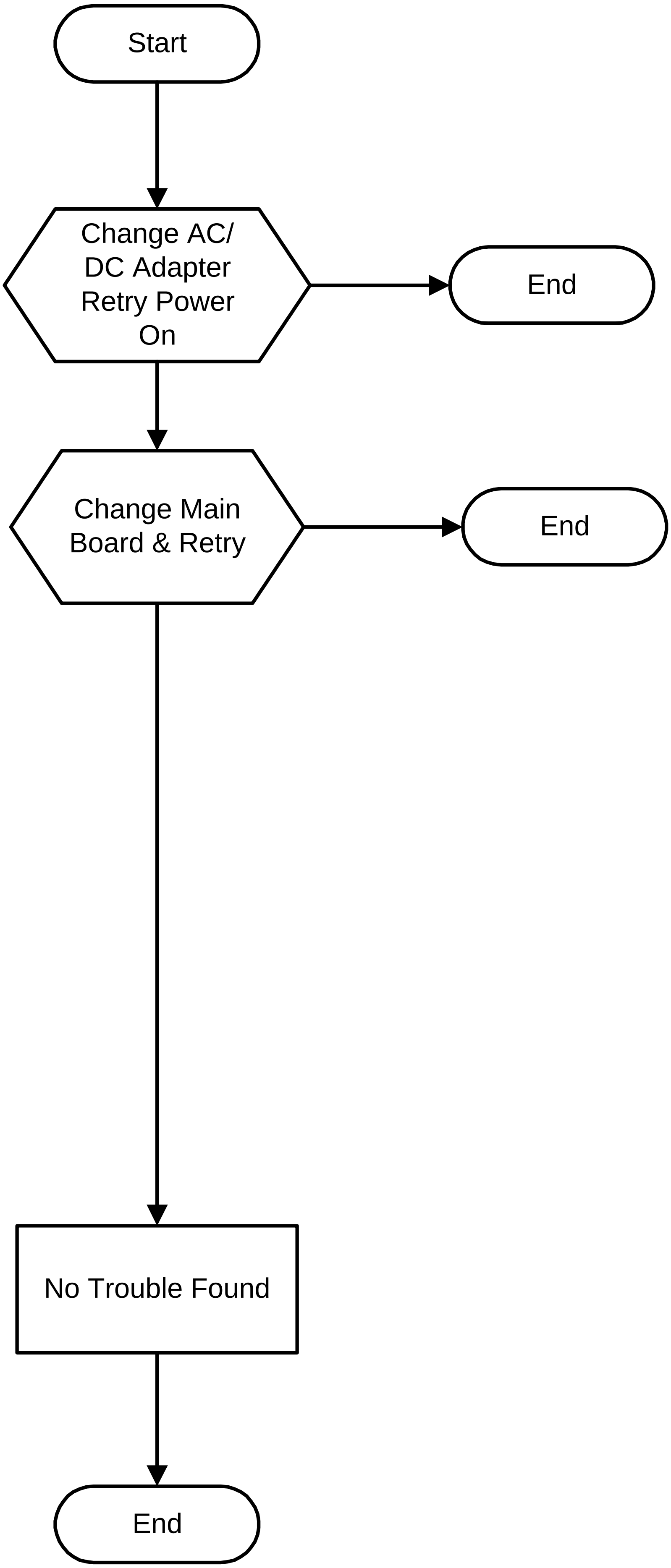
6. Troubleshooting Flow Chart

Main Procedure

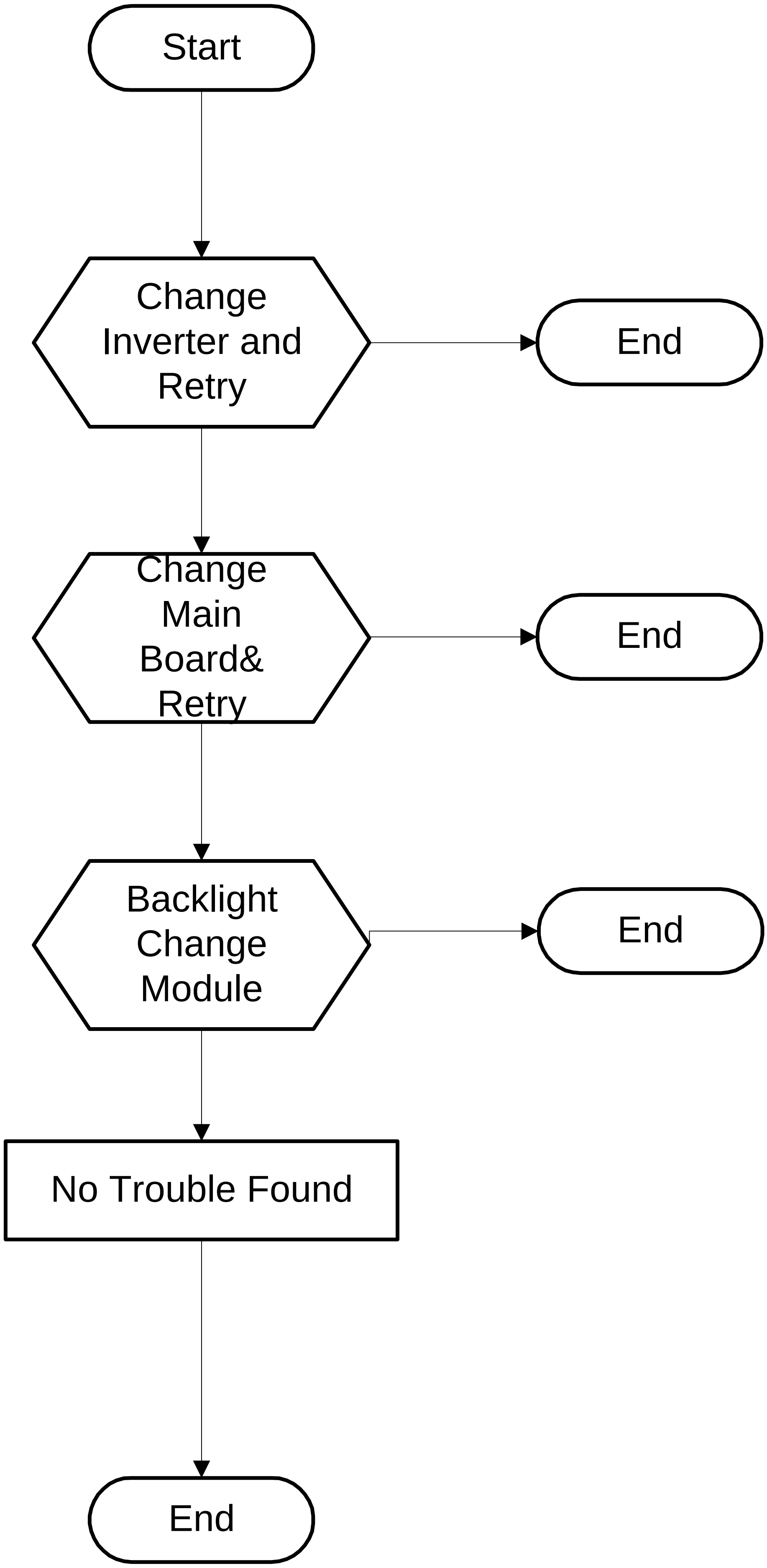



1
Is backlight on?
No
B. Backlight Troubleshooting
Yes
Display Performance O.K.?
No
C. Performance Troubleshooting
Yes
Function Adjustment O.K.?
No
D. Function Troubleshooting
Yes
Audio Function O.K.?
No
E. Audio Troubleshooting
No Trouble Found
End

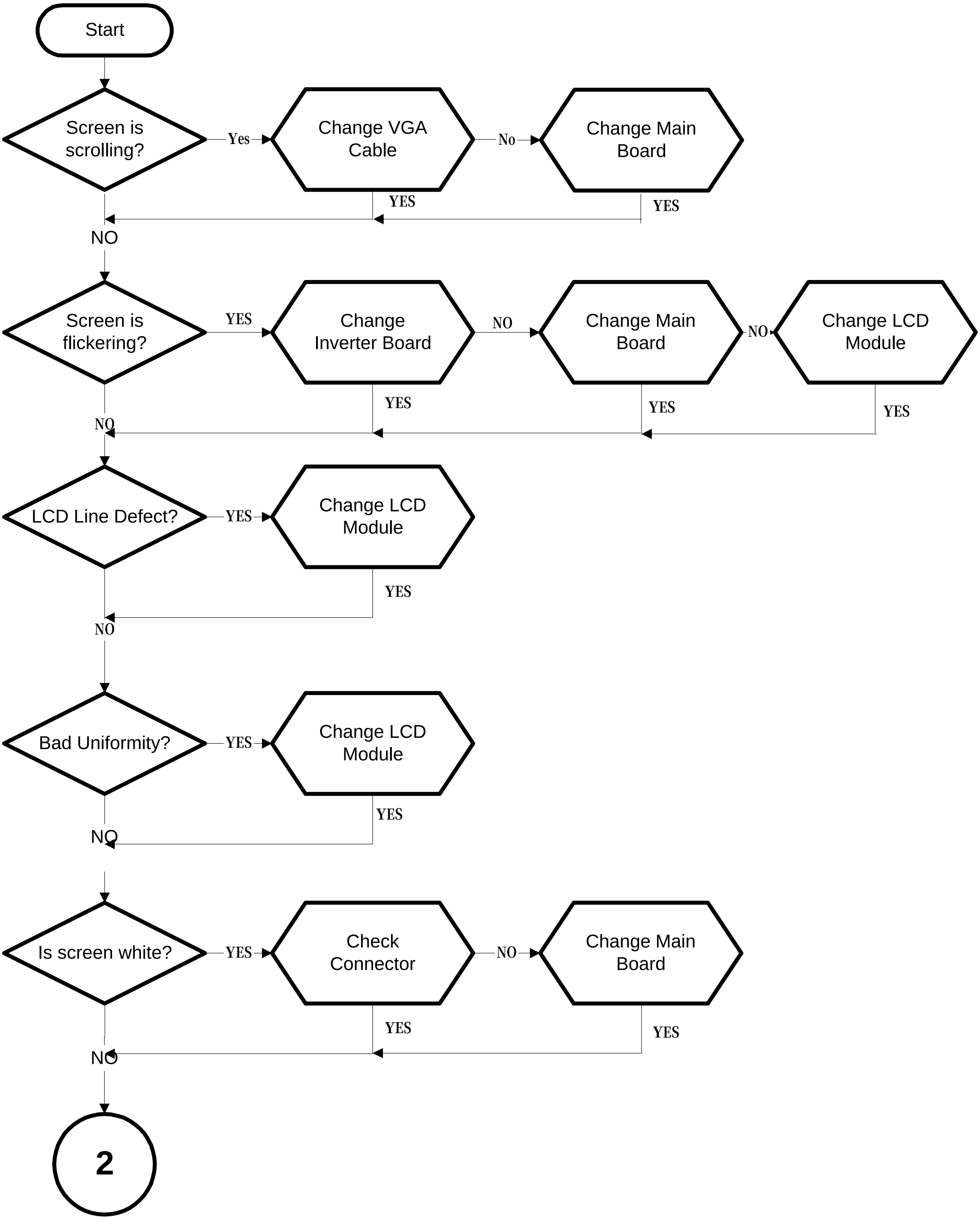
A. Power Circuit Troubleshooting

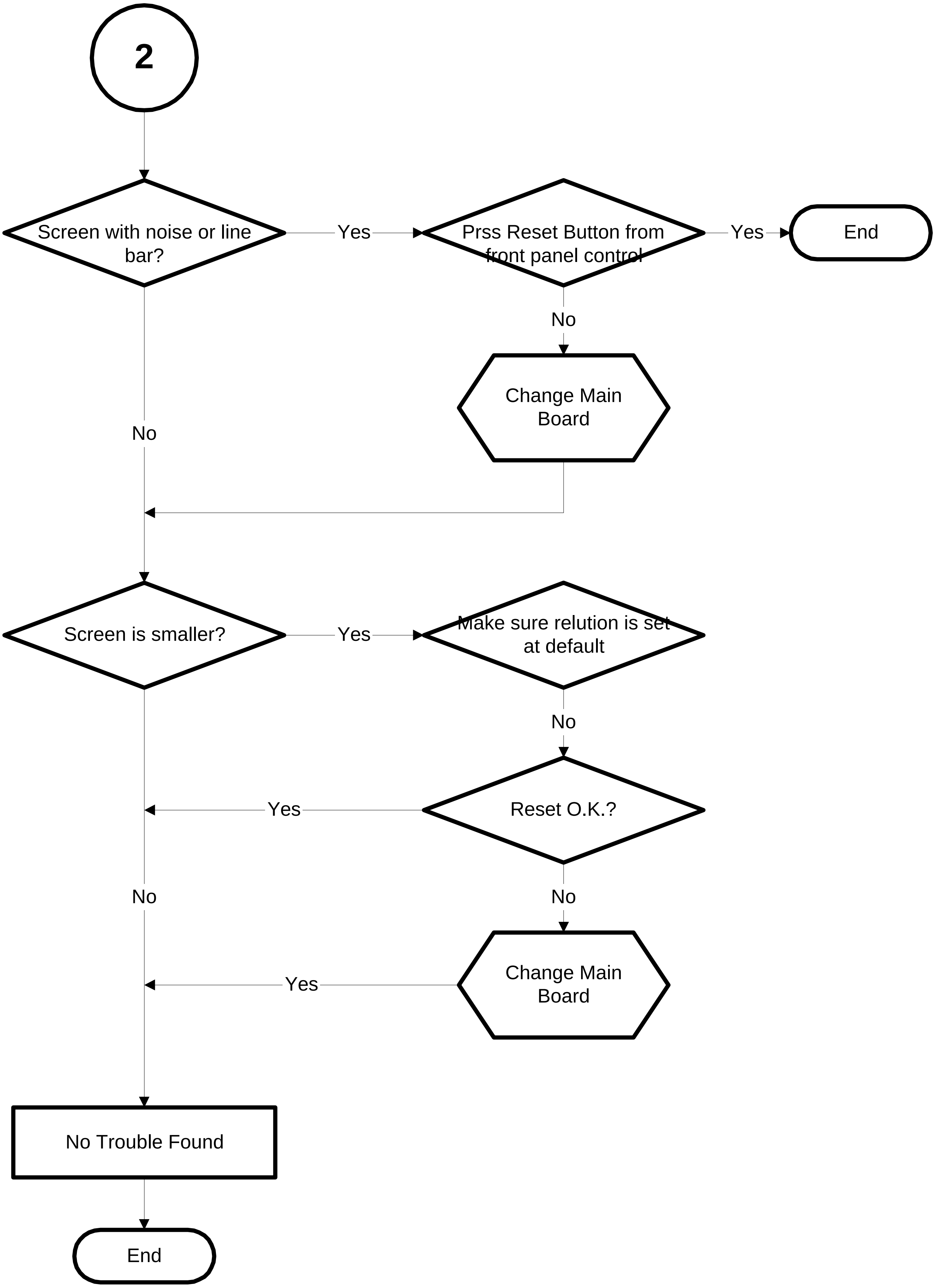


B. Backlight Troubleshooting

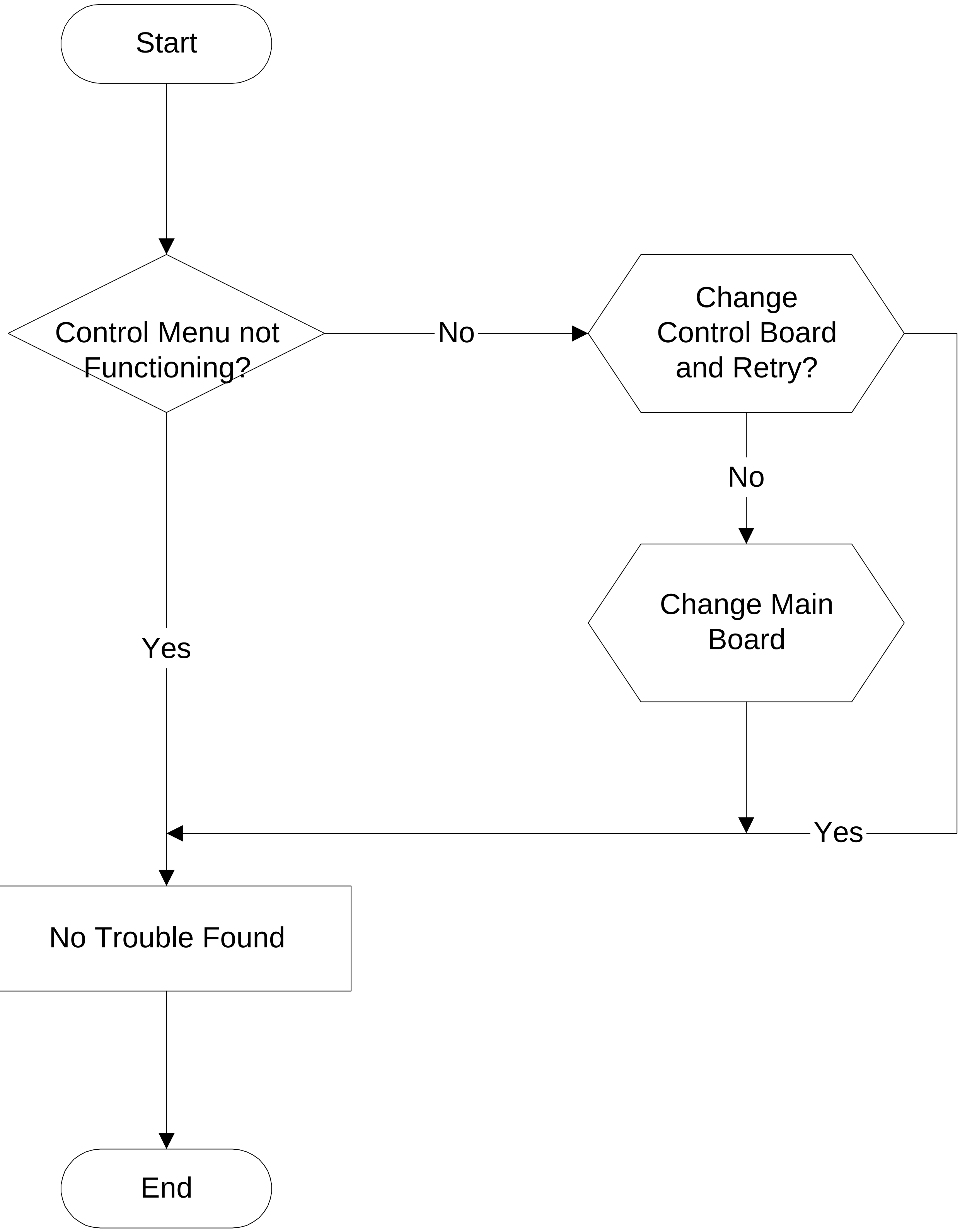


C. Performance Troubleshooting

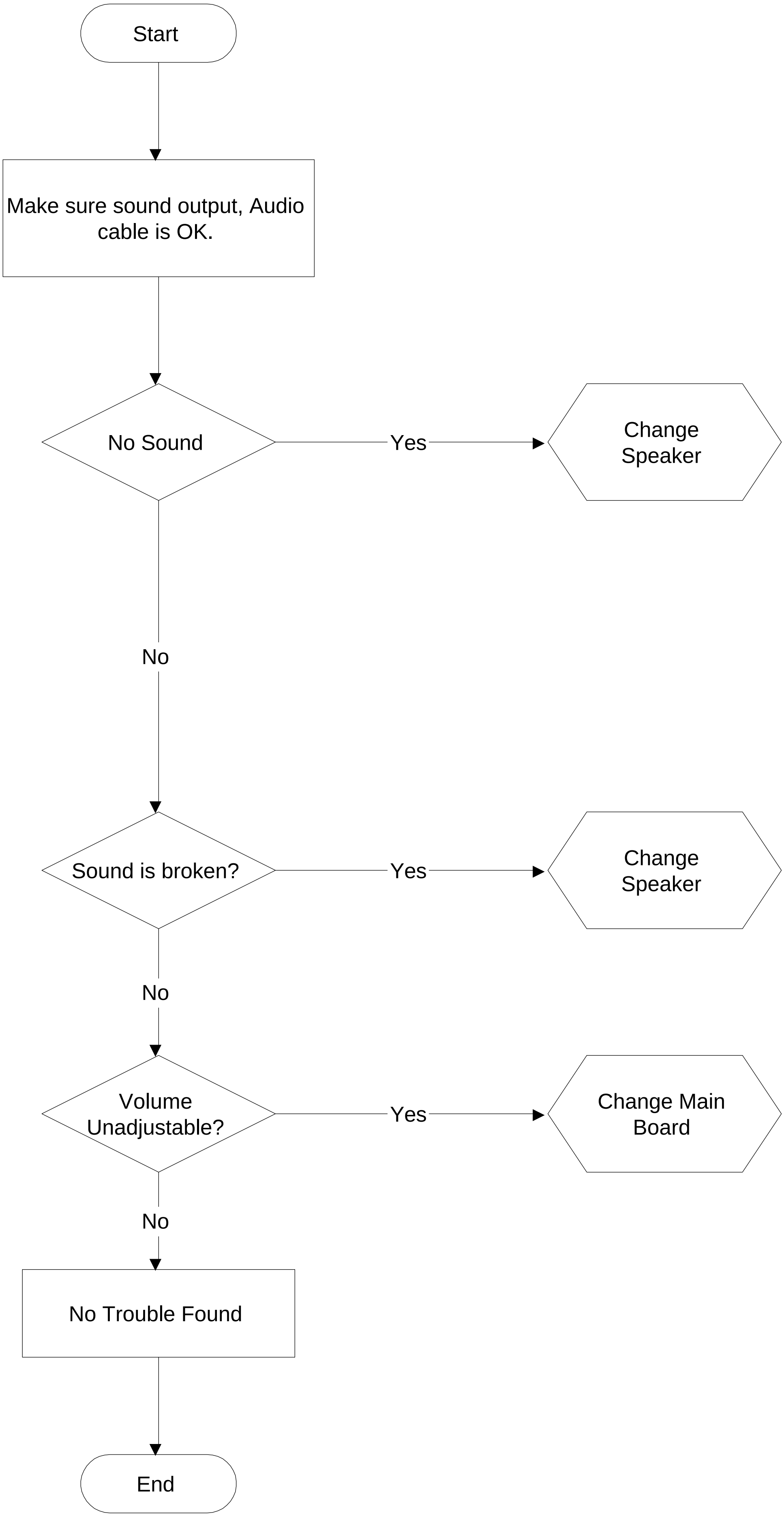



2
Screen with noise or line bar?
Yes
Prss Reset Button from front panel control
Yes
End
No
Change Main Board
No
Screen is smaller?
Yes
Make sure relution is set at default
No
Reset O.K.?
Yes
No
No
Change Main Board
Yes
No Trouble Found
End

D. Function Troubleshooting



E. Audio Troubleshooting



7. Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST (Q9b-2)

ViewSonic Model Number: VS11201

Serial No. Prefix: Q5W **Rev: 1b**

Item	Description		ECR/ECN	ViewSonic P/N	Universal number#	Q'ty
1	**Accessories:**	Cable(CON).POWER CORD/AC		A-00005760	W40218A022631	1
2	**PC Board**	MAIN BOARD ASSY		B-00005755	XLMF179040001	1
3		KEY BOARD ASSY		B-00005756	XLMF179050006	1
4		POWER BOARD+INVERTER BOARD ASSY		B-00005757	XLM1700390003	1
5	**Cabinets:**	BASE ASSY LM/F1704&1904		C-00005763	XLM1704280002	1
6		COVER(HINGE)/ ABSHB BLACK		C-00005768	P70EAJ26LM010	1
7		BEZEL ABS PA757 BLACK C		C-00005769	P727AF26LM030-C	1
8	**Cables:**	AUDIO CABIE 26AWG UL2547		CB-00005758	W0026918A0142	1
9		RGB CABLE 18AWG UL20276		CB-00005759	W0318715AQ261	1
10	**Documentation:**	Safety Label		DC-00005753	F102506190401	1
11		Blank Label		DC-00005754	F103010LM0001	1
12		USER'S MANUAL		DC-00005761	F000219043001	1
13	**Electronic Components:**	Speaker 26AWG/UL Squareness 8Ω 2W		E-00005762	E231080200004	1
14		LCD MODULE HSD190ME13-A16 1280×1024 [SX] 19" LVDS HANNSTAR		E-00005792	E34862190H303	1
15		LCD MODULE HSD190ME13-A10 1280×1024 [SX] 19" LVDS HANNSTAR	Added on 08/03/06	E-00008009	E34862190H304	1
16	**Hardware:**	BRACKET ASSY LM/F199		HW-00005765	XLMF199200001	1
17		HOLDER ASSY LM/F199 for RGB		HW-00005766	XLMF199210001	1
18	**Packing Material:**	CRAFT BOX		P-00005767	F400722190402	1
19		POLYETHYLENE-L /EPS LM/F199		P-00005771	F20133F199001	1
20		POLYETHYLENE-R/EPS LM/F199		P-00005772	F20143F199001	1
21		GENERIC FOAM SET		P-00001347	30833	
22		GENERIC BOX		P-00002515	20653	
23	**Plastics:**	HOUSING ASSY LM/LM1904		PL-00005764	XLM1904110001	1
24		FUNCTION-KEY F1704 ABS HB		PL-00005770	P763A926LM070	1

Remark 1: Above listed items are examples, supplier can expand the rows to add more necessary items.

Remark 2: All revised RSPLs with newly added items or any change made should be highlighted and correlated with the ECN/ECR approved by ViewSonic Corporation. This is to eliminate repeated cross checks of each item between this version and prior versions.

BOM LIST (Q9b-2) "Panel A16"

ViewSonic Model Number: VS11201
Rev: 1b
Serial No. Prefix: Q5W

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	E-00005762	E231080200004	SPEAKER 26AWG/UL Rectangle 8Ω 2W GSM SPEAKER+SPEAKER WIRE 4P/2P+2PIN L400/145MM			2
2	E-00005792	E34862190H303	LCD MODULE HSD190ME13-A16 1280×1024 [SX] 19" LVDS HANNSTAR			1
3	DC-00005754	F103010LM0001	Blank Label copper LM/MONITOR Series L43*W10mm			1
4	P-00005771	F20133F199001	POLYETHYLENE-L /EPS LM/F199 L470*W110*H150mm			1
5	P-00005772	F20143F199001	POLYETHYLENE-R/EPS LM/F199 L470*W110*H150mm			1
6	N/A	F300250000047	BAG /PE L550*W480*T0.03mm Transparent			1
7	N/A	F300250000062	Wrapping bag PE L260*W180*T0.03mm(ARCH item B AG-18026-0030			1
8	N/A	F300483202001	PEARL BGA EPE L320*W200*T1.0mm FOR LM1904			1
9	N/A	F400722190403	CARTON LM1904 L490*W123*H498mm for viewsonic REV:			1
10	N/A	F401422LM0001	PARTITION SUPPORT BC LM/MONITOR series L800*W50*H50*T5mm			0.0625
11	N/A	F401422LM0003	PARTITION SUPPORT BC LM/MONITOR series L2000*W50*H50*T5mm			0.0625
12	N/A	F401918190401	PAPER COVER LM/LM1904 L985*W750*H60mm			0.005
13	N/A	F401918190402	PAPER COVER LM/LM1904 L1115*W985*H60mm			0.02777
14	N/A	F50301F199001	PALLET SMOKE WOOD LM/F199 L735*W980*H120mm			0.0025
15	N/A	F50301F199002	PALLET SMOKE WOOD LM/F199 L1140*W980*H120mm			0.01388
16	N/A	F900181000001	PE BAG LIMPID W500*T0.03mm 1500m/coil			0.000156
17	N/A	F9008G2000002	PACKTHREAD PP WHITE W14.5mm*T0.8mm 1300m/ coi			0.0003
18	N/A	M104244009401	SCREW MACHINE /STEEL +/Binding Φ4.0×L9.0mm NI			6
19	N/A	M105243005401	SCREW MACHINE (Binding) Φ3.0mm L5mm NICKEL			12
20	N/A	M105244005401	SCREW MACHINE 十/Binding Φ4.0*L5mm NICKEL with toothed lock washers			1
21	N/A	M108253006401	SCREW MACHINE/ +/T WITH WASHER Φ3*L6mm NI			1
22	N/A	M168253022401	T-C M3*22.0-B			2
23	N/A	M621700LM0450-A	Bracket SECC LM/LM1904 L409*W208*H46mm (RGB CABLE) REV:(			1
24	N/A	P36A3A2010001	MYLAR L136*W124*T0.188mm			1
25	N/A	P36AMAG010001	MYLAR L410*W330*T0.12mm transparent			1
26	N/A	P391510700001	SPEAKER SPONGE L15*W10*T7.0mm			2
27	N/A	P441208440001	RUBBER CUSHION /RUBBER L15*W8*T9.8mm			1
28	N/A	P441508980001	BLACKL15*8*9.8 BLACK EVA L15mm*W10mm*H11mm WITI			5
29	N/A	P449016300001	ADHESIVE RUBBER CUSHION L90*W16*T3mm			2
30	N/A	P44AL20300001	RUBBER CUSHION(UP) L395*W20*T3.0mm RUBBER			1
31	C-00005768	P70EAJ26LM010	COVER(HINGE)/ ABSHB BLACK C LM/F199 L125*W31*H27mm			1
32	N/A	P727AF26LM031-C	BEZEL ABS PA757 BLACK C printing LM/LM1904 FOR ViewSonic REV:1			1
33	PL-00005770	P763A926LM070	FUNCTION-KEY F1704 ABS HB BLACK-C			1
34	N/A	P791P500LM030-A	LENS PMMA NATURAL INJECTION LM/LM1704&1904 REV:0			1
35	N/A	V300800000001	GLUE 50g/BOTTLE			0.01
36	N/A	V5004AP150201	ADHESIVE TAPE L25000*W15*T0.25mm 25m/ROLL(YW0910300002			0.004
37	N/A	V5005A5080101	Sticky tape L50000*W8*T0.1mm			0.006
38	N/A	V501275024801	Sticky tape L75m*W48*T 0.045mm FOR VIEWSONEC			0.006
39	N/A	V900505020003	AL FOIL L50×W30×T0.10mm			1
40	N/A	V900505030001	AL FOIL L100xW40xT0.07mm			1
41	N/A	V900505030007	AL FOIL L100xW30*T0.35mm(Y78400004G *1)			4
42	CB-00005758	W0026918A0142	AUDIO CABIE 26AWG UL2547 L=1800mm 6C BLACK			1
43	N/A	W0330715AQ261	RGB CABLE 30AWG UL20276 L1500mm 15PIN TO 2*8PIN BLACK C			1
44	A-00005760	W40218A022631	(CON).POWER CORD/AC UL18AWG L1500mmBLACK.C.I-SHENG125V 10A....			1
45	CB-00006506	W47A103015001	WIRE FFC CY050408001 P=1.0mm 30PIN L195mm HUNG FU			1
46	N/A	W47B100835001	WIRE FFC FFCC0605T2250EC P=1.0mm 8PIN L250mm			1
47	N/A	XLM1700390015-SF	POWER BOARD+INVERTER BOARD ASSY PI-SB03 24V+5V LM/17"/19LCD MONITOR FOR VIEWSONIC REV:1(PHIHONG feihong)			1
48	N/A	XLM1700390015-SH	POWER BOARD+INVERTER BOARD ASSY PI-SB03 24V+5V LM/17"/19" LCD MONITOR FOR VIEWSONIC REV:1(UMEC huan nong)			1
49	N/A	XLM1700390015-SD	POWER BOARD+INVERTER BOARD ASSY PI-SB03 24V+5V LM/17"/19" LCD MONITOR FOR VIEWSONIC REV:1(DARFON DA FANG)			1
50	N/A	XLM1704040001	MAIN BOARD ASSY LM/F1704/F1904 (2sides FR-4 T1.6mm REV:1.0)			1
51	N/A	A01F241615A21	IC EEPROM AT24C16 2500ns ATMEL SOIC-8 2K*8 (SMD)	U4		1
52	N/A	A03D111703A53	IC Linear voltage converter AP1117E18A SOT-223- 3Pin(SMD)	REG2		1
53	N/A	A03D111703U01	VOLTAGE REGULATOR LD1117-18-A SOT-223 3PIN 1.8V UTC (SMD)			1
54	N/A	A03D111703A54	IC LINEAR VOLTAGE REGULATOR AP1117E33A SOT-223 ANACHIP (SMD)	REG1		1
55	N/A	A03D111703G03	IC LINEAR IC VOLTAGE REGULATOR GL1117A-3.3 (INPUT 4.8~12V OUTPUT 3.3V) SOT-223 GTM LeadFree (SMD)			1
56	N/A	A03K206819A41	LINEAR IC AUDIO AMPLIFIER APA2068KAI SOP-16 ANPEC LEAD FREE (SMD)	UA1		1
57	N/A	A07TV51202M02	IC MCU MTV512GMG 64K MYSON LQFP-48P Lead Free (SMD)	U3		1
58	N/A	A08D2023R2001	IC ASIC/SCALER RTD2023L PLCC-48P REALTEK Lead Free (SMD)	U1		1
59	N/A	BLM17A4M10300	PCB printing LM/F1704/F1904 for mainboard 2SIDES FR-4 T1.6mm REV:1.1			1
60	N/A	C02210003J111	CAP MLCC NPO 10pF 50V ±5% 0603 TAPPING (SMD)	C15 C18 C22 C46 C47		5
61	N/A	C02212003J111	CAP MLCC /NPO 12PF 50V ±5%(J) 0603 TAPPING (SMD)	C26		1
62	N/A	C02222003J111	CAP MLCC /NPO 22PF 50V ±5%(J) 0603 TPPING (SMD)	C25		1
63	N/A	C02310501K111	CAP MLCC X5R 1uF 16V ±10% (K) 0603 TAPING (SMD)	CA5 CA6 CA8		3
64	N/A	C02410403K111	CAP MLCC X7R 0.1UF/50V ±10%(K) 0603 TAPPING(SMD)	C2 C3 C4 C5 C6 C8 C9 C11 C12 C13 C14 C15 C16 C18 C19 C21 C22 C23 C28 C30 C31 C40 C42 C43 C48 C49 C50 C51 C52 C53 C54 C55 C56 C57 C58 CA1 CA3 CA4		38
65	N/A	C02447302K111	CAP MLCC/ X7R 0.047uF /25V ±10%(K) 0603 TAPPING(SMD)	C24 C32 C35 C36 C37 C39		6
66	N/A	C02847401M111	CAP MLCC Y5V 0.47uF 16V±20%(M) 0603 TAPPING (SMD)	C33		1
67	N/A	C4021006M2431	CAP EC(S) -40~105℃ 10uF 25V ±20% (M) Φ5×H7mm P=2.5mm (DIP)	C29 C41 C44		3
68	N/A	C4021014M2532	CAP EC –40~105℃ 100uF/16V ±20%(M) Φ6.3×H P=2.5mm (DIP)	CA2 EC2 EC3		3
69	N/A	C4022204M2322	CAP EC -40~105℃ 22UF/16V ±20%(M) § 5*H5MM P=2.0MM (DIP)	C1 C10 C17 C20		4
70	N/A	C4022214M3232	CAP EC -40~105℃ 220UF /16V ±20%(M) Φ6.3*H7mm P=2.5mm (DIP)	C45 EC1		2
71	N/A	C4022296M2122	CAP EC -40℃~105℃ 2.2uF/25V ±20%(M) ψ4*H5mm P=2.0mm (DIP)	CA7		1
72	N/A	C4024704M2242	CAP EC -40℃ -+105℃ 47uF/16V Φ5*11mm M DIP	C7		1
73	N/A	D00BAV9905G01	DIODE BAV99 SOT-23 GTM (SMD)	D1 D2 D3		3
74	N/A	D00L414803Y11	DIODE LL4148 SOD-123 YING (SMD)	D8 D9 D10 D11		4
75	N/A	D01ZT52C03K01	ZENER BZT52C SOD-123KINGWELL 5.6V (SMD)	D4 D5 D6 D7		4
76	N/A	J4509100085C1	FFC CONNECTOR P=1mm 8PIN 90° CF16061D0T0 HANQUAN (DIP)	JP1		1
77	N/A	J4509100306H1	FFC CONN ,30 PIN,1.0,DIP 180°,1 ROW,Cvilux 16301V0T or compatible	CN2		1
78	N/A	J4527200164A1	WAFER P=2.0mm 16PIN(2*8PIN) 180° GRAY (DIP)	CN3		1
79	N/A	L012121201113	BEAD CHOKE Ferrite(generalcircuit) DDY160808U121MB 120Ω 200mA 0603 (SMD)	FBA1 FBA3 FBA4 FBA5 FBA6 FBA7 FBA8 FBA9 L5		9
80	N/A	L012700201111	BEAD CHOKE Ferrite(generalcircuit) DDY160808U121MB 70Ω 200mA 0603(1608) TAPING FORD GLORY LEAD FREE (SMD)	L2 L3 L4		3
81	N/A	L013121302A11	CHIP BEAD Ferrite Chip Beads (high current) WB201209B601QLT02 120Ω 3000mA 1206 Walsin (SMD)	FB1 FB2 FB3 FB4 FBA2		5
82	N/A	Q441240047151	CRYSTAL QUARTZ/ 24MHZ30PPM 20PF 49US CRE (DIP)	Y1		1
83	N/A	R070000J20111	05: RESISTOR.RES CHIP 0Ω ±5%(J).1/8W 0603 TAPPING (SMD)......	L1 R15 R19 R24		4

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
84	N/A	R070220J30111	05: RESISTOR.RES CHIP 22Ω ±5%(J) 1/16W 0603 TAPPING (SMD)......	R53 R55		2
85	N/A	R070330J30111	RES CHIP 33Ω ±5%(J) 1/16W 0603 TAPPING(SMD)	R56		1
86	N/A	R070470J10111	RESISTOR.RES CHIP 47Ω ±5%(J) 1/10W.0603 TAPPING (SMD)	R16 R22 R25		3
87	N/A	R070750F30111	05: RESISTOR.CHIP RES 75Ω ±1%(F).1/16W 0603 TAPPING (SMD)(Y180217509F0)	R17 R21 R26		3
88	N/A	R071000J20111	RESISTOR.RES CHIP 100Ω ±5%(J).1/8W 0603 TAPPING(SMD)......	R11 R12 R18 R20 R23 R27 R58 R59 R62 R63 R64 R65 R66 R67 R68		15
89	N/A	R071001J20111	05: RESISTOR.RES CHIP 1KΩ ±5%(J) 1/8W.0603 TAPPING (SMD)......	R2 R4 R5 R7 R61 R70		6
90	N/A	R071002J20111	05: RESISTOR.RES CHIP 10KΩ ±5%(J) 1/8W.0603 TAPPING(SMD)......	R50 R51 R52 R54 RA1 RA2		6
91	N/A	R071003J10111	RES CHIP 100KΩ ±5%(J) 1/1 0603 TAPPING (SMD)	R1		1
92	N/A	R071004J30111	RES CHIP 1MΩ ±5%(J) 1/16W 0603 TAPPING (SMD)	RG1		1
93	N/A	R071502F30111	RES CHIP 15KΩ ±1%(F) 1/16 0603 TAPPING (SMD)	R8 RA5		2
94	N/A	R072001J30111	RES CHIP 2KΩ ±5%(J) 1/16W 0603 TAPPING （SMD)(Y180222001J0)	R13 R14		2
95	N/A	R072200J20111	05: RESISTOR.RES CHIP 220Ω ±5%(J) 1/8W.0603 TAPPING(SMD)......	R60 R69		2
96	N/A	R072201J10111	RES CHIP 2.2KΩ ±5%(J) 1/10W 0603 TAPPING (SMD)	R37 R38		2
97	N/A	R073302J30111	RES CHIP 33KΩ ±5%(J) 1/16 TAPPING(SMD)(Y180213302J0)	R10		1
98	N/A	R074701J20111	RESISTOR.RES CHIP 4.7KΩ ±5%(J) 1/8W.0603 TAPPING(SMD)......	R3 R6 R28 R29 R30 R36		6
99	N/A	R074702J20111	05: RESISTOR.RES CHIP 47KΩ ±5%(J) 1/8W.0603 TAPPING (SMD)......	RA3 RA4		2
100	N/A	R076801J10111	RES CHIP 6.8KΩ ±5%(J)1/10W 0603 TAPING (SMD)	R57		1
101	N/A	R141002J20111	RES ARRAY 10KΩ ±5%(J) 1/16W 8P4R 3216 TAPPING (SMD)(Y270181002J0)	RP1 RP2 RP3 RP4		4
102	N/A	T00T390402G01	TR GMBT3904 SOT-23 GTM (SMD)	Q2 Q3 Q4		3
103	N/A	T00T390602G01	Triode GMBT3906 SOT-23 GTM (SMD)	Q7 Q8 Q9 Q10		4
104	N/A	T01A340102A21	XSTR AO3401/ST3401, SOT- 23;3 , Alpha & Omega/ST	Q1		1
105	N/A	W432264C21301	WIRE HARNESS UL1007 26AWG 4PIN P=2mm 180° L130mm			1
106	N/A	Y64115HB04*1	CONNECTOR M 180℃/2.0mm 1ROW 4P	CNA1		1
107	N/A	Y64115HB06*1	CONNECTOR 180℃ 2mm 6PIN	CN1		1
108	N/A	XLM1704050002	KEY BOARD ASSY LM/LM1704 For Realtek			1
109	N/A	BLM1704B10212	BARE PCB LM/MR1704 BUTTON BOARD 1SIDE FR-1 T1.6mm REV:1.2			1
110	N/A	D462213405201	LED Φ4*H5.5mm P=1.5mm ORA/GREEN BULK 3PIN fold 90°	LED2		1
111	N/A	J4509100085C1	FFC CONNECTOR P=1mm 8PIN 90° CF16061D0T0 HANQUAN (DIP)	CN1		1
112	N/A	P764P295LM010	Switch button PA66 BLACK LCD MONITOR Series REV:0	SW1 SW2 SW3 SW4 SW5		5
113	N/A	XLM1704150001	AUDIO BOARD ASSY LM/F1704 (PCB 1SIDE FR-1 T1.6mm REV:1.0)			1
114	N/A	BLM1704A10110	BARE PCB LM/F1704 AUDIO BOARD 1SIDE FR-1 T1.6mm REV:1.0			1
115	N/A	C02410403K111	CAP MLCC X7R 0.1UF/50V ±10%(K) 0603 TAPPING(SMD)	C1 C2 C3		3
116	N/A	J41070515T201	Ear-Phone JACK,5 PIN,DIP 90°,LIME GREEN,Tekcon	CNA1		1
117	N/A	L012601301311	BEAD CHOKE Ferrite Chip Beads(generalcircuit) FMC2012 600Ω 300 mA 0805(2012) TAPING Chilisin SMD	FB1 FB2 FB3		3
118	N/A	Y64115HB04*1	CONNECTOR M 180°/2.0mm 1ROW 4P	CNA1		1
119	N/A	XLM17VA380001	SHIELD ASSY LM/MR17V-AAA(SHIELD+MYLAR)			1
120	N/A	M711200LM0160-A	SHIELD SPTE LM/MR17V-AAAD REV:0			1
121	N/A	P369579010001	MYLAR L95*W79.5*T0.1mm WHITH ADHESIVE			1
122	N/A	XLM1904280001	BASE ASSY LM/LM1904			1
123	N/A	P610051010001	FOOT RUBBERLM/199 rubber Φ17*T2mm black-c			4
124	N/A	P74AAF26LM010-A	BASE ABS PA757 BLACK C INJECTION LM/1704&1904(L280*W184mm) REV:0			1
125	N/A	XLMF199110002	Housing ASSY LM/F199 (RGB+AUDIO) BLACK C			1
126	N/A	M621700LM0190	REAR_BRACKET SECC T=1.0mm			2
127	N/A	M632700LM0020	FIX PLATE(HINGE)/SECC NATURAL LM/F199 L136*W35.5*H6 T=2.0mm REV:0			1
128	N/A	M632700LM0060	Fix Plate SECC T0.8mm LM/ML17A2-a REV:0			1
129	N/A	P728A926LM210-C	HOUSING ABS HB BLACK C PRINTING (RGB+AUDIO) LM/F199 REV:0			1
130	N/A	V300800000001	GLUE 50g/BOTTLE（: - 60℃~+200℃）			0.01
131	HW-00005765	XLMF199200001	BRACKET ASSY LM/F199			1
132	N/A	M154223012801	SCREW Φ3*12MM WITH WASHER			3
133	N/A	M701900LM0040	Hinge/SPCC LM/F199 L121*W31*H22.3mm WITH NICKEL REV:0			1
134	N/A	P711AJ26LM010	BRACKET(BASE)/ABS HB BLACK C LM/F199 L77.4*W43*H75.5mm			1

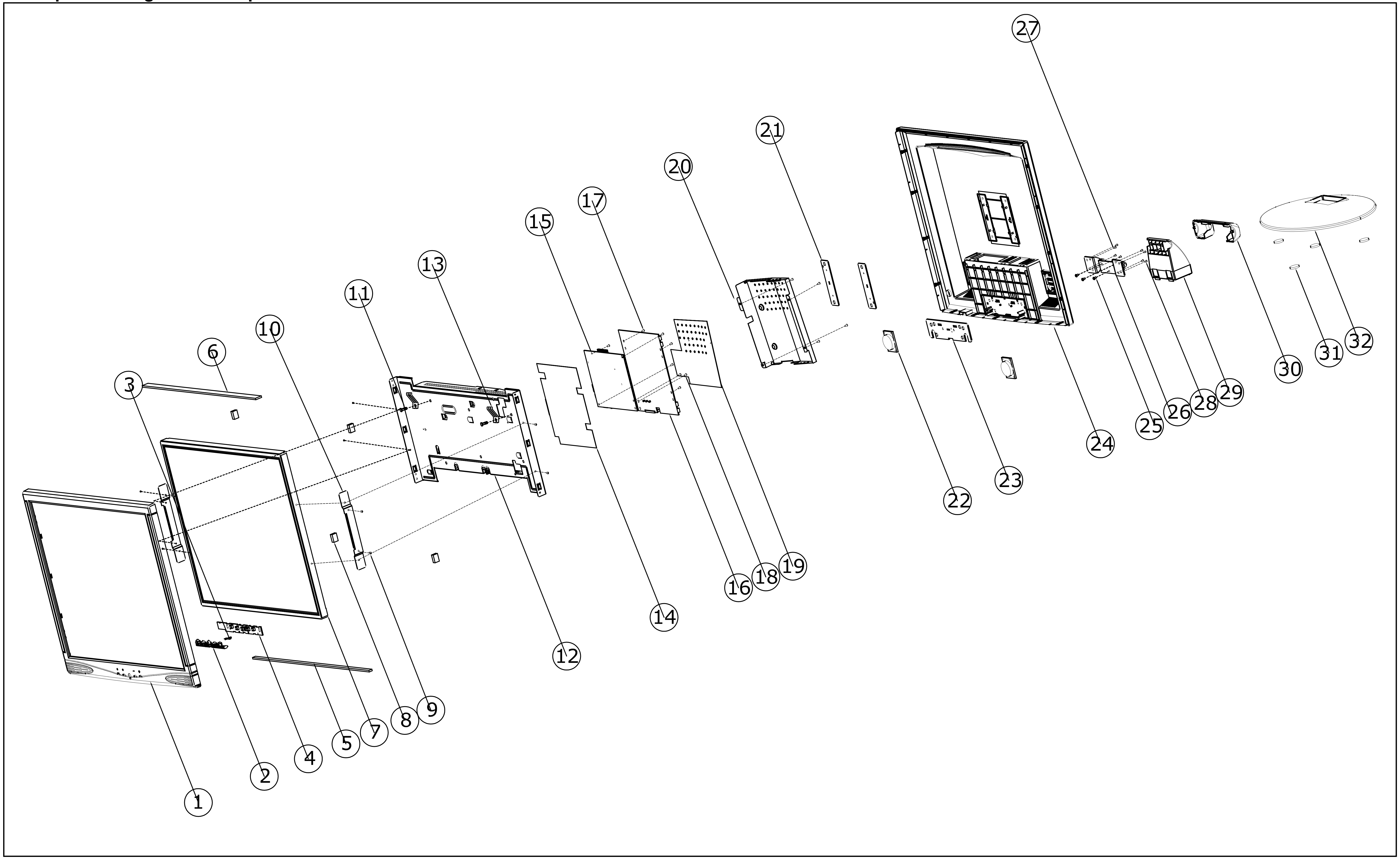
BOM LIST (Q9b-2) "Panel A10"

ViewSonic Model Number: VS11201
Rev: 1b
Serial No. Prefix: Q5W

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	E-00005762	E231080200004	SPEAKER 26AWG/UL Rectangle 8Ω 2W GSM SPEAKER+SPEAKER WIRE 4P/2P+2PIN L400/145MM			2
2	E-00008009	E34862190H304	LCD MODULE HSD190ME13-A10 1280×1024 [SX] 19" LVDS HANNSTAR LEAD FREE			1
3	DC-00005754	F103010LM0001	Blank Label copper LM/MONITOR Series L43*W10mr			1
4	P-00005771	F20133F199001	POLYETHYLENE-L /EPS LM/F199 L470*W110*H150mm			1
5	P-00005772	F20143F199001	POLYETHYLENE-R/EPS LM/F199 L470*W110*H150mm			1
6	N/A	F300250000047	BAG /PE L550*W480*T0.03mm Transparent			1
7	N/A	F300250000062	Wrapping bag PE L260*W180*T0.03mm(ARCH item B AG-18026-0030)			1
8	N/A	F300483202001	PEARL BGA EPE L320*W200*T1.0mm FOR LM1904			1
9	N/A	F400722190401	CARTON BC LM/LM1904 L490*W125*H496mm whinout printing			1
10	N/A	F401422LM0001	PARTITION SUPPORT BC LM/MONITOR series L800*W50*H50*T5mm			0.0625
11	N/A	F401422LM0003	PARTITION SUPPORT BC LM/MONITOR series L2000*W50*H50*T5mm			0.0625
12	N/A	F401918190401	PAPER COVER LM/LM1904 L985*W750*H60mm			0.005
13	N/A	F401918190402	PAPER COVER LM/LM1904 L1115*W985*H60mm			0.02777
14	N/A	F50301F199001	PALLET SMOKE WOOD LM/F199 L735*W980*H120mr			0.0025
15	N/A	F50301F199002	PALLET SMOKE WOOD LM/F199 L1140*W980*H120mr			0.01388
16	N/A	F900181000001	PE BAG LIMPID W500*T0.03mm 1500m/coil			0.000156
17	N/A	F9008G2000002	PACKTHREAD PP WHITE W14.5mm*T0.8mm 1300m/ coi			0.0003
18	N/A	M104244009401	SCREW MACHINE /STEEL +/Binding Φ4.0×L9.0mm NI			6
19	N/A	M105243005401	SCREW MACHINE (Binding) Φ3.0mm L5mm NICKEI			12
20	N/A	M105244005401	SCREW MACHINE 十/Binding Φ4.0*L5mm NICKEL with toothed lock washers			1
21	N/A	M108253006401	SCREW MACHINE/ +/T WITH WASHER Φ3*L6mm NI			1
22	N/A	M168253022401	T-C M3*22.0-B			2
23	N/A	M621700LM0450-A	Bracket SECC LM/LM1904 L409*W208*H46mm (RGB CABLE) REV:0			1
24	N/A	P36A3A2010001	MYLAR L136*W124*T0.188mm			1
25	N/A	P36AMAG010001	MYLAR L410*W330*T0.12mm transparent			1
26	N/A	P391510700001	SPEAKER SPONGE L15*W10*T7.0mm			2
27	N/A	P441208440001	RUBBER CUSHION /RUBBER L15*W8*T9.8mm			1
28	N/A	P441508980001	BLACKL15*8*9.8 BLACK EVA L15mm*W10mm*H11mm WITH			5
29	N/A	P449016300001	ADHESIVE RUBBER CUSHION L90*W16*T3mm			2
30	N/A	P44AL20300001	RUBBER CUSHION(UP) L395*W20*T3.0mm RUBBER			1
31	C-00005768	P70EAJ26LM010	COVER(HINGE)/ ABSHB BLACK C LM/F199 L125*W31*H27mr			1
32	N/A	P727AF26LM031-C	BEZEL ABS PA757 BLACK C printing LM/LM1904 FOR ViewSonic REV:1			1
33	PL-00005770	P763A926LM070	FUNCTION-KEY F1704 ABS HB BLACK-C			1
34	N/A	P791P500LM030-A	LENS PMMA NATURAL INJECTION LM/LM1704&1904 REV:0			1
35	N/A	V300800000001	GLUE 50g/BOTTLE			0.01
36	N/A	V5004AP150201	ADHESIVE TAPE L25000*W15*T0.25mm 25m/ROLL(YW0910300002)			0.004
37	N/A	V5005A5080101	Sticky tape L50000*W8*T0.1mm			0.006
38	N/A	V501275024801	Sticky tape L75m*W48*T 0.045mm FOR VIEWSONEC			0.006
39	N/A	V900505020003	AL FOIL L50×W30×T0.10mm			1
40	N/A	V900505030001	AL FOIL L100xW40xT0.07mm			1
41	N/A	V900505030007	AL FOIL L100xW30*T0.35mm(Y78400004G *1)			4
42	CB-00005758	W0026918A0142	AUDIO CABIE 26AWG UL2547 L=1800mm 6C BLACK			1
43	N/A	W0330715AQ261	RGB CABLE 30AWG UL20276 L1500mm 15PIN TO 2*8PIN BLACK C			1
44	A-00005760	W40218A022631	(CON).POWER CORD/AC UL18AWG L1500mmBLACK.C.I-SHENG125V 10A...			1
45	CB-00006506	W47A103015001	WIRE FFC CY050408001 P=1.0mm 30PIN L195mm HUNG FU			1
46	N/A	W47B100835001	WIRE FFC FFCC0605T2250EC P=1.0mm 8PIN L250mr			1
47	N/A	XLM1700390015-SF	POWER BOARD+INVERTER BOARD ASSY PI-SB03 24V+5V LM/17"/19LCD MONITOR FOR VIEWSONIC REV:1(PHIHONG feihong) .			1
48	N/A	XLM1700390015-SH	POWER BOARD+INVERTER BOARD ASSY PI-SB03 24V+5V LM/17"/19" LCD MONITOR FOR VIEWSONIC REV:1(UMEC huan nong)			1
49	N/A	XLM1700390015-SD	POWER BOARD+INVERTER BOARD ASSY PI-SB03 24V+5V LM/17"/19" LCD MONITOR FOR VIEWSONIC REV:1(DARFON DA FANG)			1
50	N/A	XLM1704040001	MAIN BOARD ASSY LM/F1704/F1904 (2sides FR-4 T1.6mm REV:1.0)			1
51	N/A	A01F241615A21	IC EEPROM AT24C16 2500ns ATMEL SOIC-8 2K*8 (SMD)	U4		1
52	N/A	A03D111703A53	IC Linear voltage converter AP1117E18A SOT-223- 3Pin(SMD)	REG2		1
53	N/A	A03D111703U01	VOLTAGE REGULATOR LD1117-18-A SOT-223 3PIN 1.8V UTC (SMD)			1
54	N/A	A03D111703A54	IC LINEAR VOLTAGE REGULATOR AP1117E33A SOT-223 ANACHIP (SMD)	REG1		1
55	N/A	A03D111703G03	IC LINEAR IC VOLTAGE REGULATOR GL1117A-3.3 (INPUT 4.8~12V OUTPUT 3.3V) SOT-223 GTM LeadFree (SMD)			1
56	N/A	A03K206819A41	LINEAR IC AUDIO AMPLIFIER APA2068KAI SOP-16 ANPEC LEAD FREE (SMD)	UA1		1
57	N/A	A07TV51202M02	IC MCU MTV512GMG 64K MYSON LQFP-48P Lead Free (SMD)	U3		1
58	N/A	A08D2023R2001	IC ASIC/SCALER RTD2023L PLCC-48P REALTEK Lead Free (SMD)	U1		1
59	N/A	BLM17A4M10300	PCB printing LM/F1704/F1904 for mainboard 2SIDES FR-4 T1.6mm REV:1.1			1
60	N/A	C02210003J111	CAP MLCC NPO 10pF 50V ±5% 0603 TAPPING (SMD)	C15 C18 C22 C46 C47		5
61	N/A	C02212003J111	CAP MLCC /NPO 12PF 50V ±5%(J) 0603 TAPPING (SMD)	C26		1
62	N/A	C02222003J111	CAP MLCC /NPO 22PF 50V ±5%(J) 0603 TPPING (SMD)	C25		1
63	N/A	C02310501K111	CAP MLCC X5R 1uF 16V ±10% (K) 0603 TAPING (SMD)	CA5 CA6 CA8		3
64	N/A	C02410403K111	CAP MLCC X7R 0.1UF/50V ±10%(K) 0603 TAPPING(SMD)	C2 C3 C4 C5 C6 C8 C9 C11 C12 C13 C14 C15 C16 C18 C19 C21 C22 C23 C28 C30 C31 C40 C42 C43 C48 C49 C50 C51 C52 C53 C54 C55 C56 C57 C58 CA1 CA3 CA4		38
65	N/A	C02447302K111	CAP MLCC/ X7R 0.047uF /25V ±10%(K) 0603 TAPPING(SMD)	C24 C32 C35 C36 C37 C39		6
66	N/A	C02847401M111	CAP MLCC Y5V 0.47uF 16V±20%(M) 0603 TAPPING (SMD)	C33		1
67	N/A	C4021006M2431	CAP EC(S) -40~105℃ 10uF 25V ±20% (M) Φ5×H7mm P=2.5mm (DIP)	C29 C41 C44		3
68	N/A	C4021014M2532	CAP EC -40~105℃ 100uF/16V ±20%(M) Φ6.3×H P=2.5mm (DIP)	CA2 EC2 EC3		3
69	N/A	C4022204M2322	CAP EC -40~105℃ 22UF/16V ±20%(M) ∮5*H5MM P=2.0MM (DIP)	C1 C10 C17 C20		4
70	N/A	C4022214M3232	CAP EC -40~105℃ 220UF /16V ±20%(M) Φ6.3*H7mm P=2.5mm (DIP)	C45 EC1		2

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
71	N/A	C4022296M2122	CAP EC -40℃~105℃ 2.2uF/25V ±20%(M) ψ4*H5mm P=2.0mm (DIP)	CA7		1
72	N/A	C4024704M2242	CAP EC -40℃ -+105℃ 47uF/16V Φ5*11mm M DIP	C7		1
73	N/A	D00BAV9905G01	DIODE BAV99 SOT-23 GTM (SMD)	D1 D2 D3		3
74	N/A	D00L414803Y11	DIODE LL4148 SOD-123 YING (SMD)	D8 D9 D10 D11		4
75	N/A	D01ZT52C03K01	ZENER BZT52C SOD-123KINGWELL 5.6V (SMD)	D4 D5 D6 D7		4
76	N/A	J4509100085C1	FFC CONNECTOR P=1mm 8PIN 90° CF16061D0T0 HANQUAN (DIP)	JP1		1
77	N/A	J4509100306H1	FFC CONN ,30 PIN,1.0,DIP 180°,1 ROW,Cvilux 16301V0T or compatible	CN2		1
78	N/A	J4527200164A1	WAFER P=2.0mm 16PIN(2*8PIN) 180° GRAY (DIP)	CN3		1
79	N/A	L012121201113	BEAD CHOKE Ferrite(generalcircuit) DDY160808U121MB 120Ω 200mA 0603 (SMD)	FBA1 FBA3 FBA4 FBA5 FBA6 FBA7 FBA8 FBA9 L5		9
80	N/A	L012700201111	BEAD CHOKE Ferrite(generalcircuit) DDY160808U121MB 70Ω 200mA 0603(1608) TAPING FORD GLORY LEAD FREE (SMD)	L2 L3 L4		3
81	N/A	L013121302A11	CHIP BEAD Ferrite Chip Beads (high current) WB201209B601QLT02 120Ω 3000mA 1206 Walsin (SMD)	FB1 FB2 FB3 FB4 FBA2		5
82	N/A	Q441240047151	CRYSTAL QUARTZ/ 24MHZ30PPM 20PF 49US CRE (DIP)	Y1		1
83	N/A	R070000J20111	05: RESISTOR.RES CHIP 0Ω ±5%(J).1/8W 0603 TAPPING (SMD)......	L1 R15 R19 R24		4
84	N/A	R070220J30111	05: RESISTOR.RES CHIP 22Ω ±5%(J) 1/16W 0603 TAPPING (SMD)......	R53 R55		2
85	N/A	R070330J30111	RES CHIP 33Ω ±5%(J) 1/16W 0603 TAPPING(SMD)	R56		1
86	N/A	R070470J10111	RESISTOR.RES CHIP 47Ω ±5%(J) 1/10W.0603 TAPPING (SMD)	R16 R22 R25		3
87	N/A	R070750F30111	05: RESISTOR.CHIP RES 75Ω ±1%(F).1/16W 0603 TAPPING (SMD)(Y180217509F0)	R17 R21 R26		3
88	N/A	R071000J20111	RESISTOR.RES CHIP 100Ω ±5%(J).1/8W 0603 TAPPING(SMD)......	R11 R12 R18 R20 R23 R27 R58 R59 R62 R63 R64 R65 R66 R67 R68		15
89	N/A	R071001J20111	05: RESISTOR.RES CHIP 1KΩ ±5%(J) 1/8W.0603 TAPPING (SMD)......	R2 R4 R5 R7 R61 R70		6
90	N/A	R071002J20111	05: RESISTOR.RES CHIP 10KΩ ±5%(J) 1/8W.0603 TAPPING(SMD)......	R50 R51 R52 R54 RA1 RA2		6
91	N/A	R071003J10111	RES CHIP 100KΩ ±5%(J) 1/1 0603 TAPPING (SMD)	R1		1
92	N/A	R071004J30111	RES CHIP 1MΩ ±5%(J) 1/16W 0603 TAPPING (SMD)	RG1		1
93	N/A	R071502F30111	RES CHIP 15KΩ ±1%(F) 1/16 0603 TAPPING (SMD)	R8 RA5		2
94	N/A	R072001J30111	RES CHIP 2KΩ ±5%(J) 1/16W 0603 TAPPING （SMD)(Y180222001J0)	R13 R14		2
95	N/A	R072200J20111	05: RESISTOR.RES CHIP 220Ω ±5%(J) 1/8W.0603 TAPPING(SMD)......	R60 R69		2
96	N/A	R072201J10111	RES CHIP 2.2KΩ ±5%(J) 1/10W 0603 TAPPING (SMD)	R37 R38		2
97	N/A	R073302J30111	RES CHIP 33KΩ ±5%(J) 1/16 TAPPING(SMD)(Y180213302J0)	R10		1
98	N/A	R074701J20111	RESISTOR.RES CHIP 4.7KΩ ±5%(J) 1/8W.0603 TAPPING(SMD)......	R3 R6 R28 R29 R30 R36		6
99	N/A	R074702J20111	05: RESISTOR.RES CHIP 47KΩ ±5%(J) 1/8W.0603 TAPPING (SMD)......	RA3 RA4		2
100	N/A	R076801J10111	RES CHIP 6.8KΩ ±5%(J)1/10W 0603 TAPING (SMD)	R57		1
101	N/A	R141002J20111	RES ARRAY 10KΩ ±5%(J) 1/16W 8P4R 3216 TAPPING (SMD)(Y270181002J0)	RP1 RP2 RP3 RP4		4
102	N/A	T00T390402G01	TR GMBT3904 SOT-23 GTM (SMD)	Q2 Q3 Q4		3
103	N/A	T00T390602G01	Triode GMBT3906 SOT-23 GTM (SMD)	Q7 Q8 Q9 Q10		4
104	N/A	T01A340102A21	XSTR AO3401/ST3401, SOT- 23;3 , Alpha & Omega/ST	Q1		1
105	N/A	W432264C21301	WIRE HARNESS UL1007 26AWG 4PIN P=2mm 180° L130mm			1
106	N/A	Y64115HB04*1	CONNECTOR M 180℃/2.0mm 1ROW 4P	CNA1		1
107	N/A	Y64115HB06*1	CONNECTOR 180℃ 2mm 6PIN	CN1		1
108	N/A	XLM1704050002	KEY BOARD ASSY LM/LM1704 For Realtek			1
109	N/A	BLM1704B10212	BARE PCB LM/MR1704 BUTTON BOARD 1SIDE FR-1 T1.6mm REV:1.2			1
110	N/A	D462213405201	LED Φ4*H5.5mm P=1.5mm ORA/GREEN BULK 3PIN fold 90°	LED2		1
111	N/A	J4509100085C1	FFC CONNECTOR P=1mm 8PIN 90° CF16061D0T0 HANQUAN (DIP)	CN1		1
112	N/A	P764P295LM010	Switch button PA66 BLACK LCD MONITOR Series REV:0	SW1 SW2 SW3 SW4 SW5		5
113	N/A	XLM1704150001	AUDIO BOARD ASSY LM/F1704 (PCB 1SIDE FR-1 T1.6mm REV:1.0)			1
114	N/A	BLM1704A10110	BARE PCB LM/F1704 AUDIO BOARD 1SIDE FR-1 T1.6mm REV:1.0			1
115	N/A	C02410403K111	CAP MLCC X7R 0.1UF/50V ±10%(K) 0603 TAPPING(SMD)	C1 C2 C3		3
116	N/A	J41070515T201	Ear-Phone JACK,5 PIN,DIP 90°,LIME GREEN,Tekcon	CNA1		1
117	N/A	L012601301311	BEAD CHOKE Ferrite Chip Beads(generalcircuit) FMC2012 600Ω 300 mA 0805(2012) TAPING Chilisin SMD	FB1 FB2 FB3		3
118	N/A	Y64115HB04*1	CONNECTOR M 180°/2.0mm 1ROW 4P	CNA1		1
119	N/A	XLM17VA380001	SHIELD ASSY LM/MR17V-AAA(SHIELD+MYLAR)			1
120	N/A	M711200LM0160-A	SHIELD SPTE LM/MR17V-AAAD REV:0			1
121	N/A	P369579010001	MYLAR L95*W79.5*T0.1mm WHITH ADHESIVE			1
122	N/A	XLM1904280001	BASE ASSY LM/LM1904			1
123	N/A	P610051010001	FOOT RUBBERLM/199 rubber Φ17*T2mm black-c			4
124	N/A	P74AAF26LM010-A	BASE ABS PA757 BLACK C INJECTION LM/1704&1904(L280*W184mm) REV:0			1
125	N/A	XLMF199110002	Housing ASSY LM/F199 (RGB+AUDIO) BLACK C			1
126	N/A	M621700LM0190	REAR_BRACKET SECC T=1.0mm			2
127	N/A	M632700LM0020	FIX PLATE(HINGE)/SECC NATURAL LM/F199 L136*W35.5*H6 T=2.0mm REV:0			1
128	N/A	M632700LM0060	Fix Plate SECC T0.8mm LM/ML17A2-a REV:0			1
129	N/A	P728A926LM210-C	HOUSING ABS HB BLACK C PRINTING (RGB+AUDIO) LM/F199 REV:0			1
130	N/A	V300800000001	GLUE 50g/BOTTLE (: - 60℃~+200℃)			0.01
131	HW-00005765	XLMF199200001	BRACKET ASSY LM/F199			1
132	N/A	M154223012801	SCREW Φ3*12MM WITH WASHER			3
133	N/A	M701900LM0040	Hinge/SPCC LM/F199 L121*W31*H22.3mm WITH NICKEL REV:0			1
134	N/A	P711AJ26LM010	BRACKET(BASE)/ABS HB BLACK C LM/F199 L77.4*W43*H75.5mm			1

8. Exploded Diagram and Exploded Parts List



EXPLODED PARTS LIST (Q9b-2)

ViewSonic Model Number: VS11201

Rev: 1a

Serial No. Prefix: Q5W

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	N/A	P727AF26LM030-A	BEZEL	1
2	PL-00005770	P763A926LM070	FUNCTON BUTTON	1
3	N/A	P791P500LM030-A	LENS	1
4	B-00005756	XLMF179050006	KEY BOARD ASSY	1
5	N/A	P44AL16300001	RUBBER CUSHION(BOTTOM)	1
6	N/A	P44A120300001	RUBBER CUSHION(TOP)	1
7	N/A	E34562190SC01	LCD MODULE M190E5-L0A	1
8	N/A	P441508980001	RUBBER CUSHION	4
9	N/A	M104243004401	SCRW MACHINE STEEL	14
10	N/A	M621700LM2000	PACK PANEL	2
11	N/A	M1082B3003401	SCRW M3*3	2
12	N/A	M410810010005	FRAME SECC NATURAL	1
13	N/A	M420202010001	EATHER	2
14	N/A	P36AHAE050001	MYLAR-BOTTOM	1
15	B-00005755	XLMF179040001	MAIN BOARD ASSY	1
16	N/A	XLM1700390004	POWER BOARD	1
17	N/A	M105243005401	SCREW MACHINE	4
18	N/A	M108253006401	SCREW M3*6	2
19	N/A	P36AHAD050001	MYLAR	1
20	N/A	M644200LM0030	SHIELD	1
21	N/A	M632700LM0030	FIX PLATE	2
22	E-00005762	E231080200004	SPEAKER	2
23	N/A	M632700LM0020	FIX PLATE(HINGE)	2
24	N/A	P728AJ26LM020	HOUSING	1
25	N/A	M154223012801	SCREW	3
26	N/A	M701900LM0040	HINGE/SPCC	1
27	N/A	M104244009401	SCREW M4*9	6
28	N/A	M168253022401	T-C M3*22.0-B	2
29	N/A	P711AJ26LM010	BRACKET	1
30	C-00005768	P70EAJ26LM010	COVER(HINGE)	1
31	N/A	P610051010001	RUBBER	4
32	N/A	P74AAF26LM010-A	BASE	1

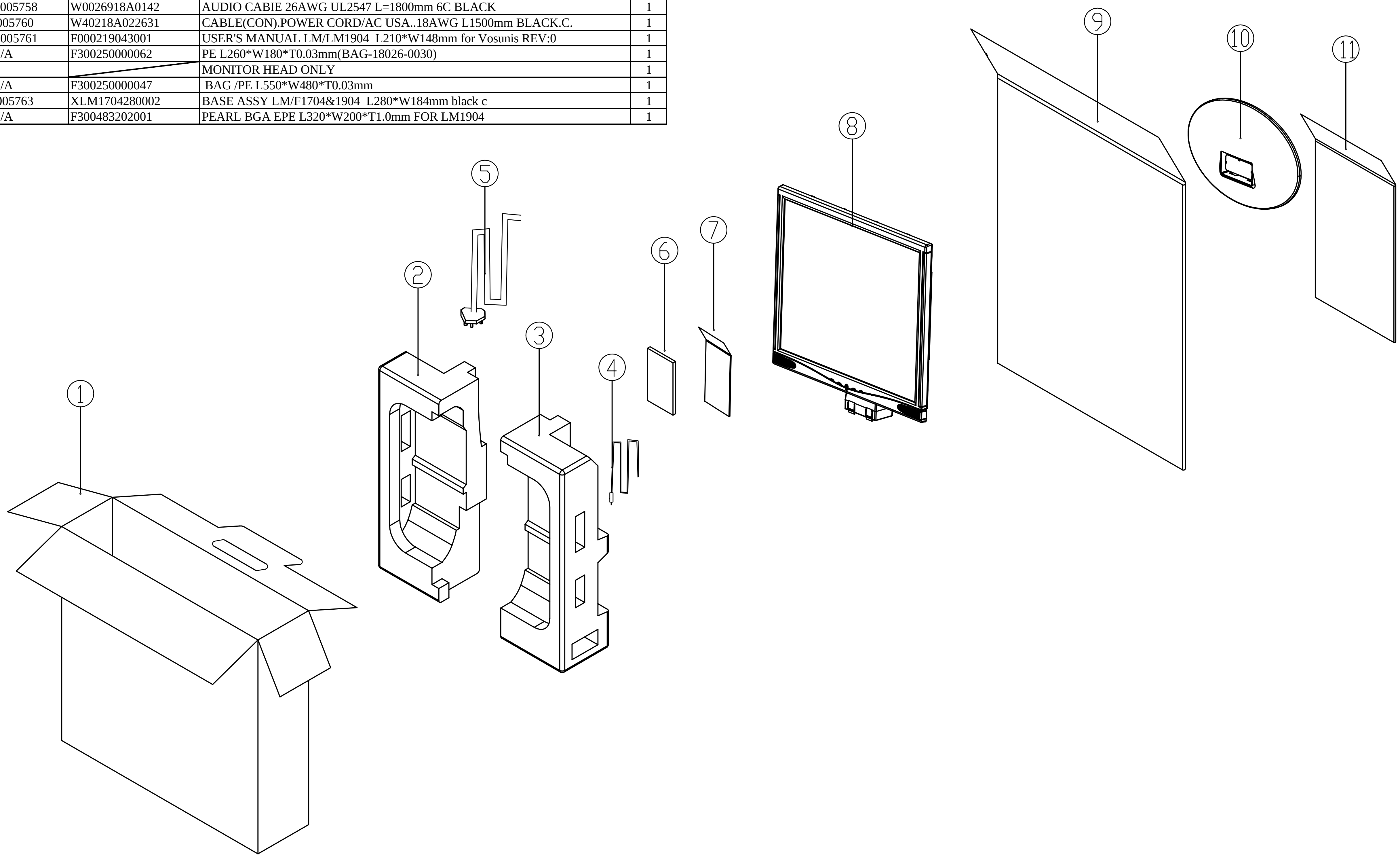
Packing Exploded chart

PACKING PART LIST (Q9b-2)

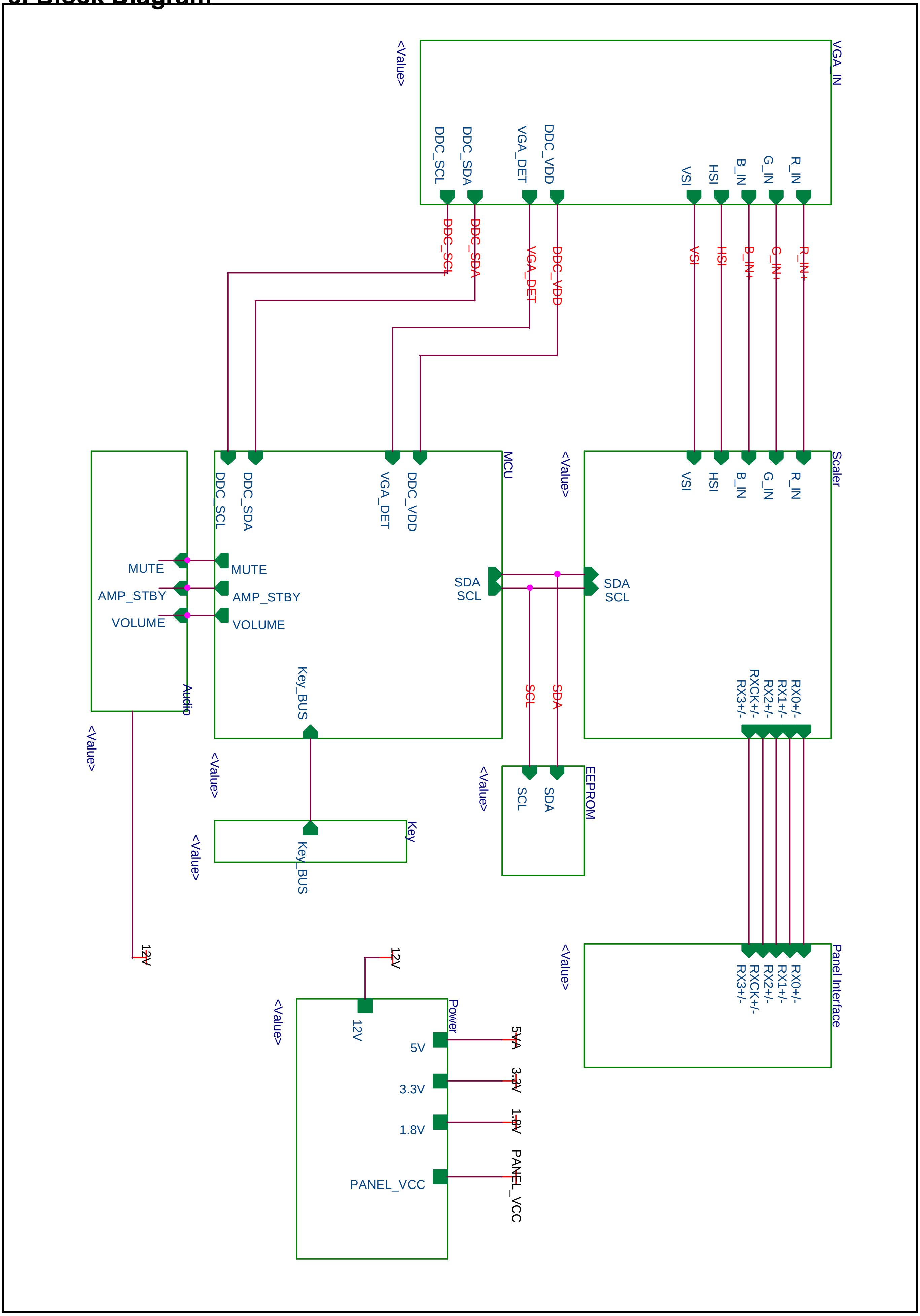
ViewSonic Model Number: VS11201

Rev: 1a

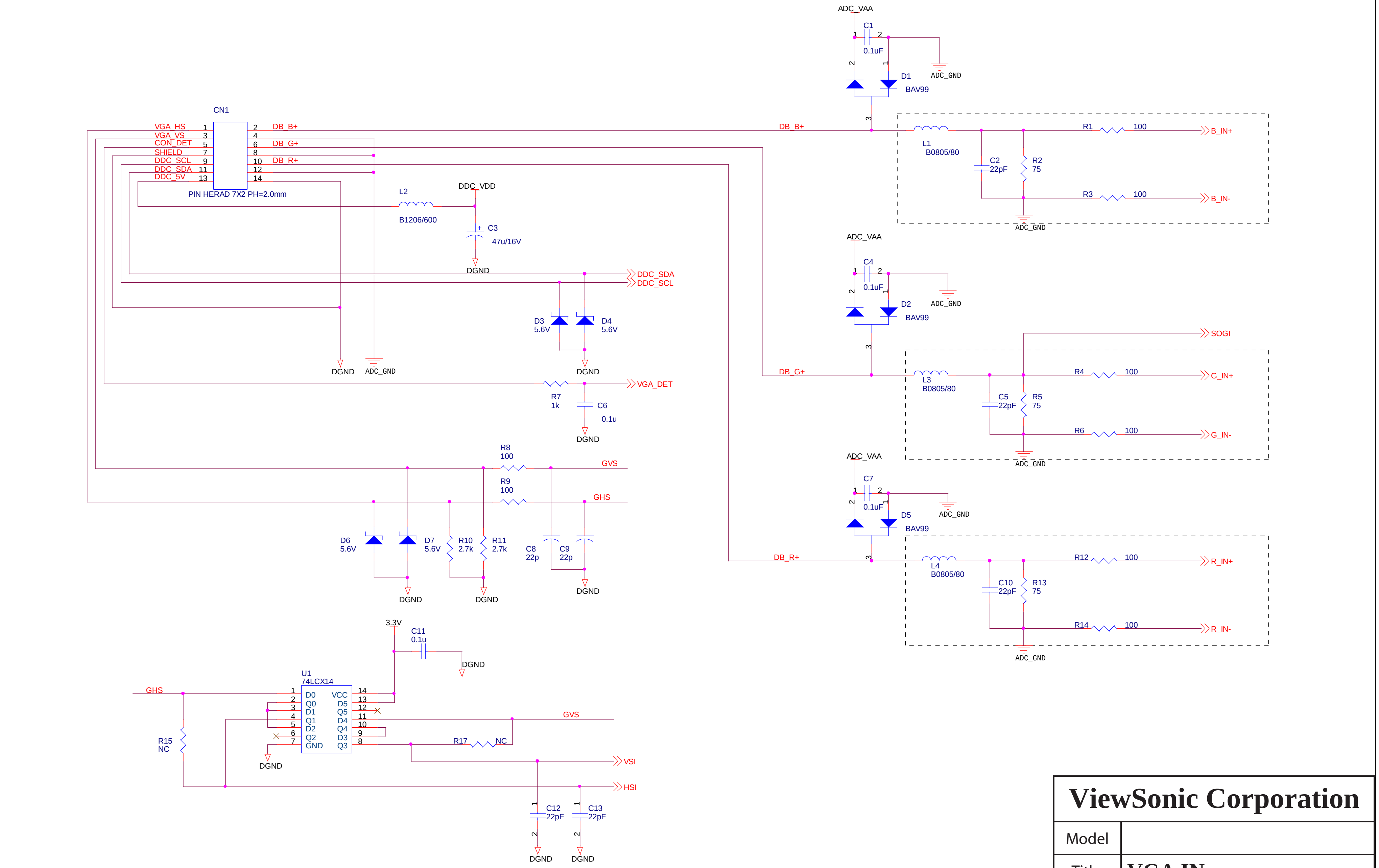
Item	ViewSonic P/N	Ref. P/N	Location	Q'ty
1	P-00005767	F400722190402	CARTON LM/LM1904 L443*W124*H498mm for Vosunis	1
2	P-00005771	F20133F199001	POLYETHYLENE-L /EPS LM/F199 L470*W110*H150mm	1
3	P-00005772	F20143F199001	POLYETHYLENE-R/EPS LM/F199 L470*W110*H150mm	1
4	CB-00005758	W0026918A0142	AUDIO CABIE 26AWG UL2547 L=1800mm 6C BLACK	1
5	A-00005760	W40218A022631	CABLE(CON).POWER CORD/AC USA..18AWG L1500mm BLACK.C.	1
6	DC-00005761	F000219043001	USER'S MANUAL LM/LM1904 L210*W148mm for Vosunis REV:0	1
7	N/A	F300250000062	PE L260*W180*T0.03mm(BAG-18026-0030)	1
8			MONITOR HEAD ONLY	1
9	N/A	F300250000047	BAG /PE L550*W480*T0.03mm	1
10	C-00005763	XLM1704280002	BASE ASSY LM/F1704&1904 L280*W184mm black c	1
11	N/A	F300483202001	PEARL BGA EPE L320*W200*T1.0mm FOR LM1904	1



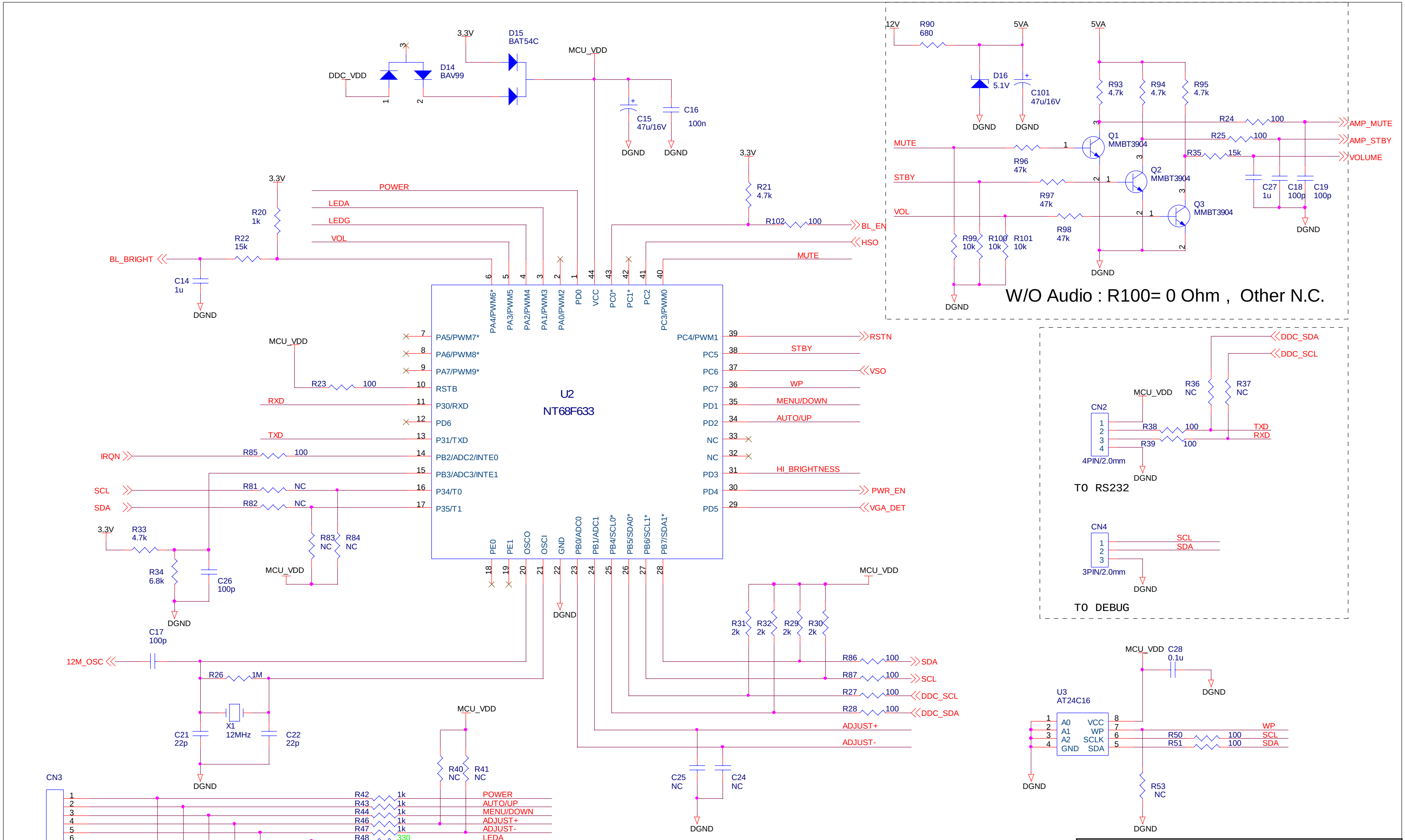
9. Block Diagram



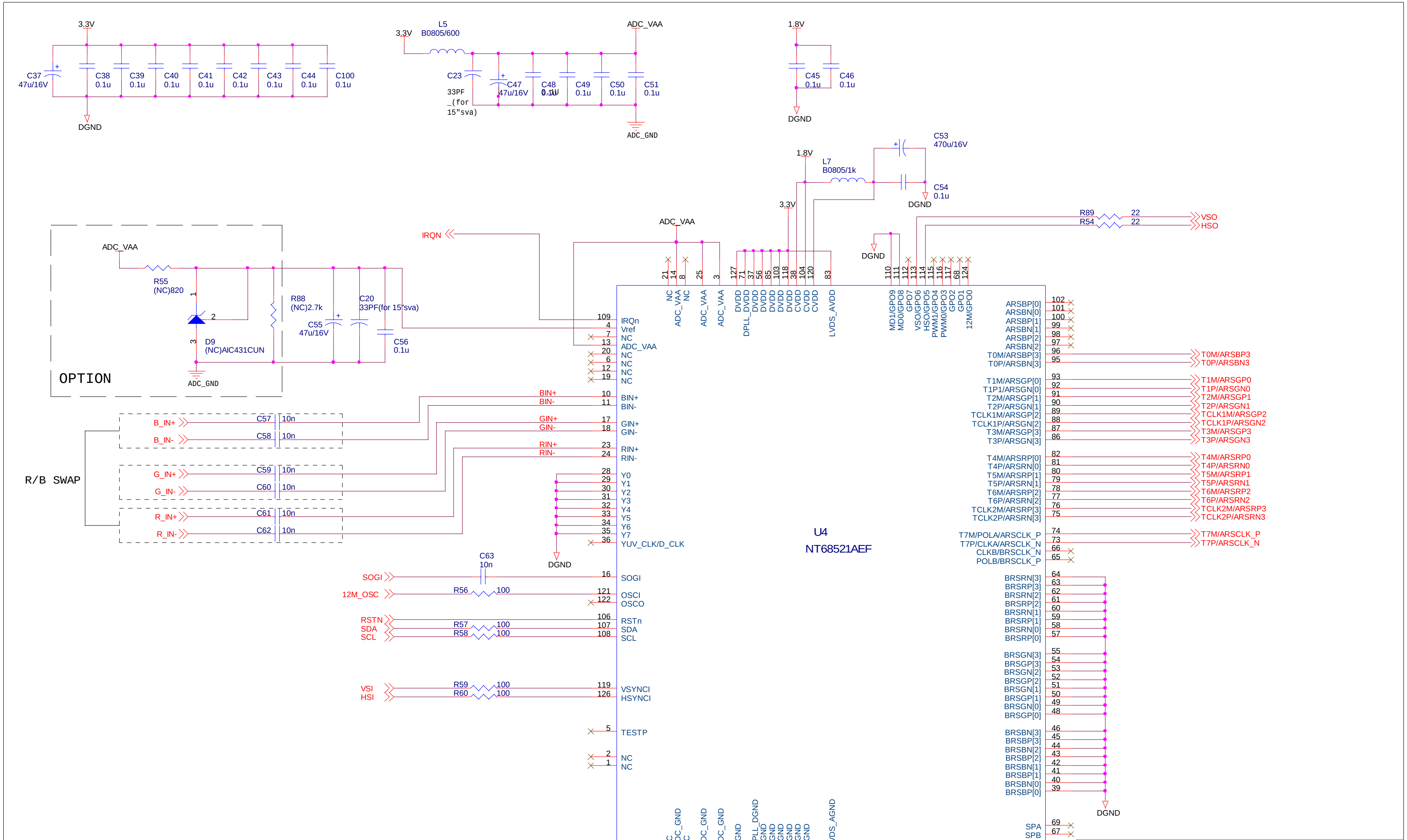
10. Schematic Diagrams



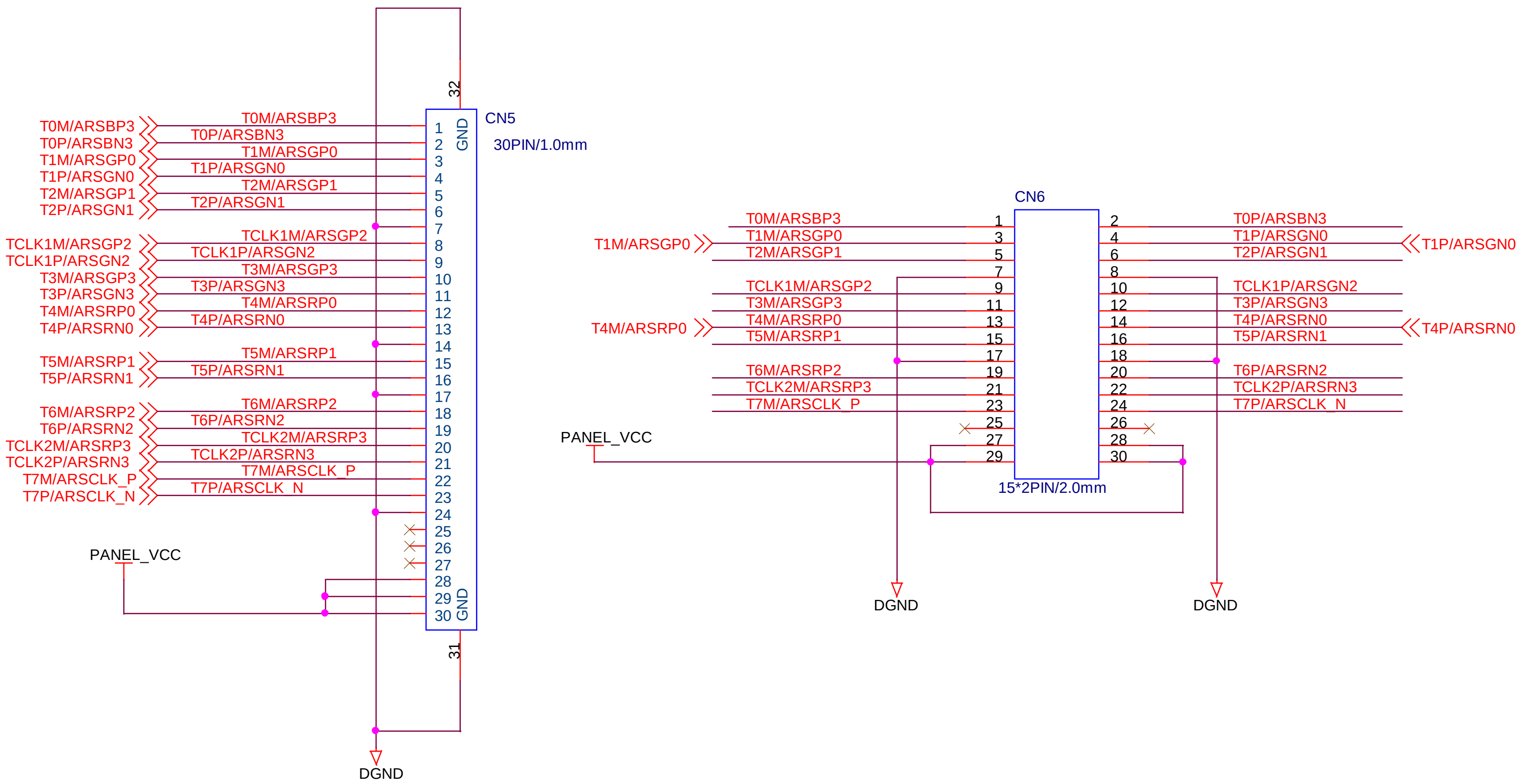
ViewSonic Corporation		
Model		
Title	VGA IN	
Date		Rev:



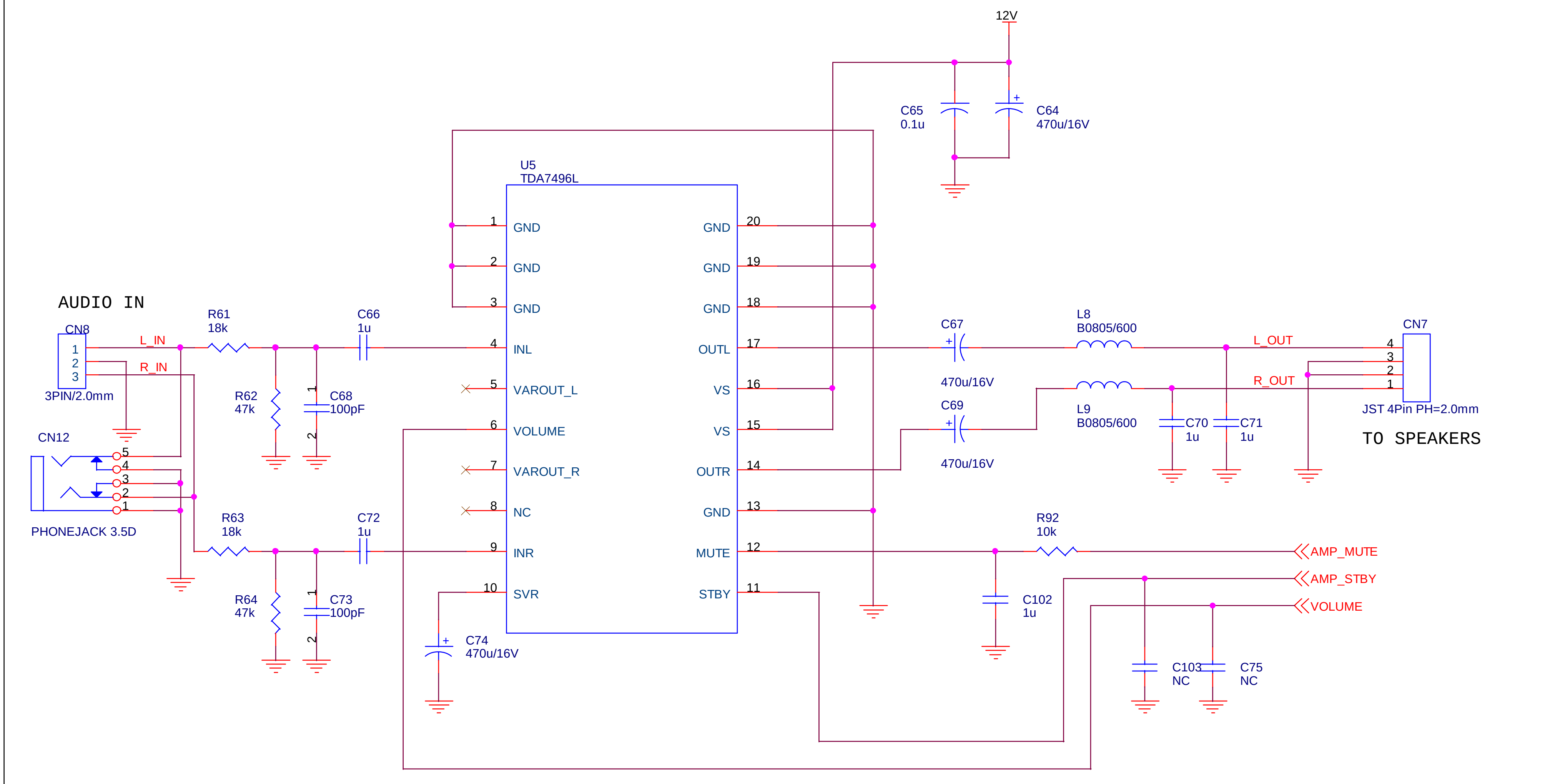
ViewSonic Corporation		
Model		
Title	**MCU**	
Date		Rev:



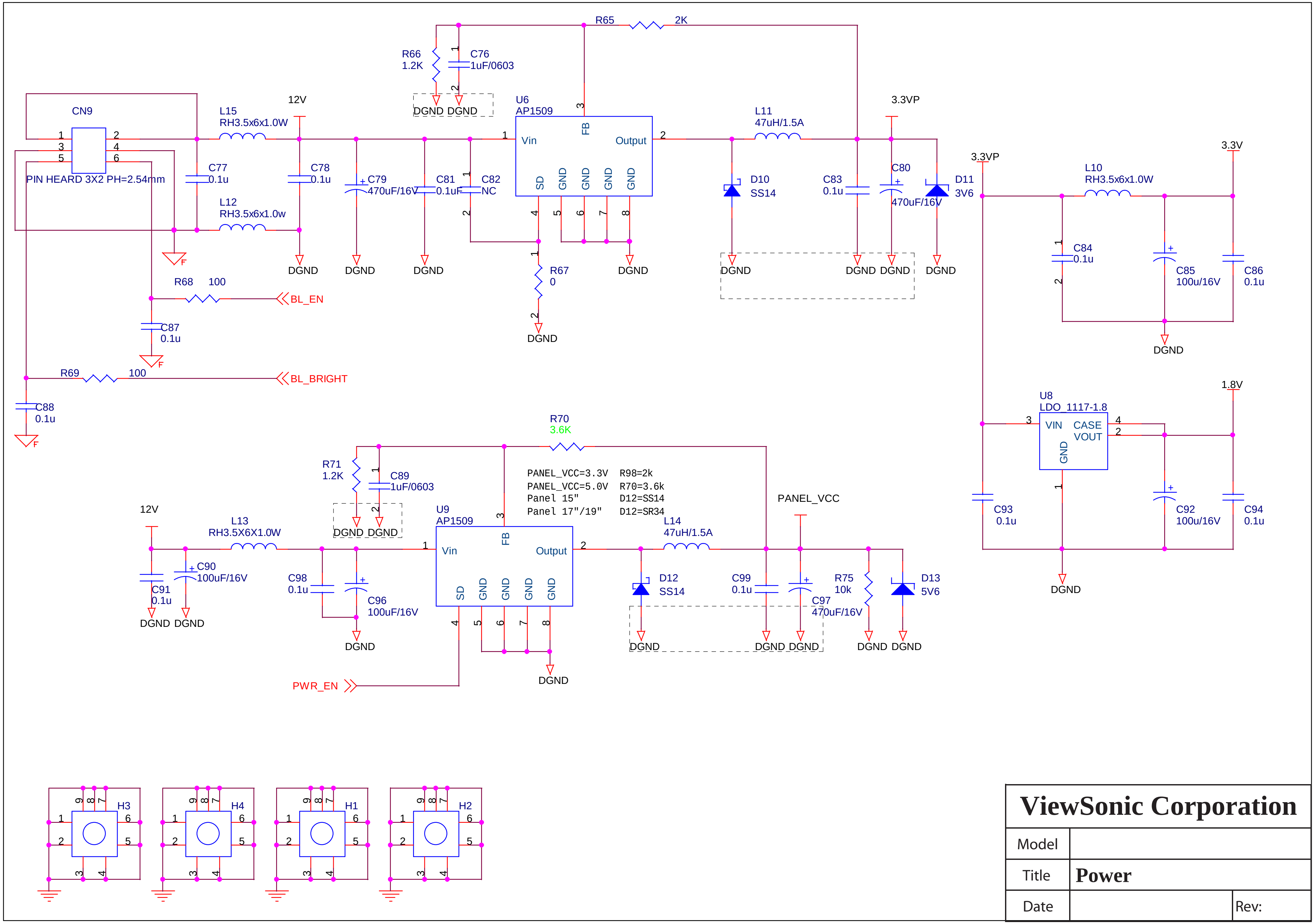
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Model		
Title	NT68521AEF	
Date		Rev:

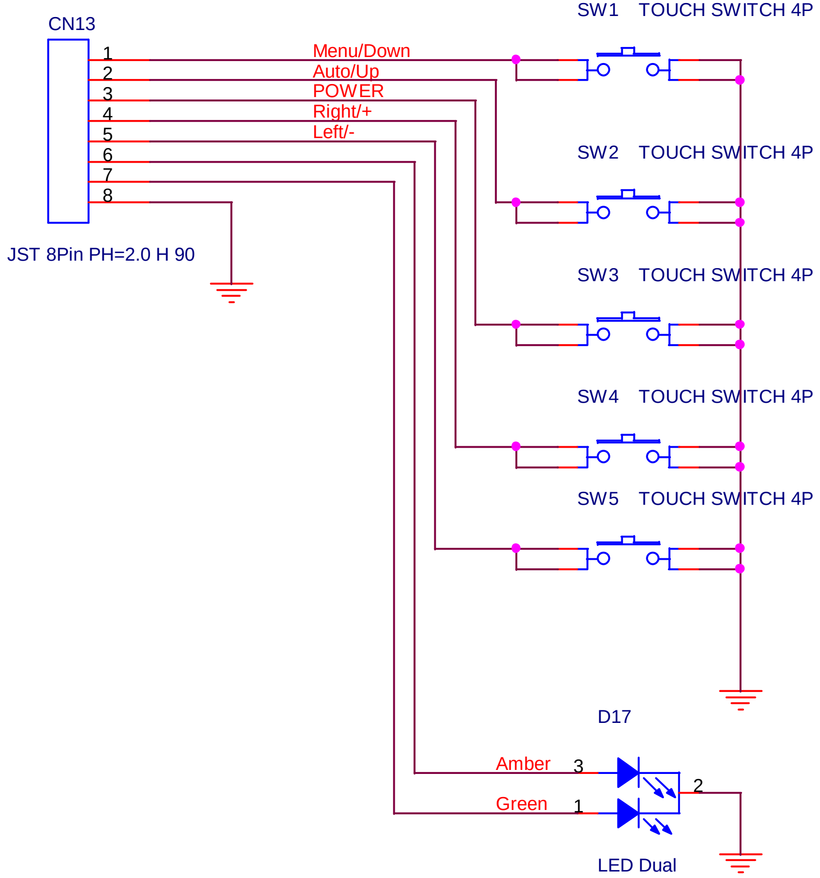


ViewSonic Corporation	
Model	
Title	PANEL CONNECTOR
Date	Rev:



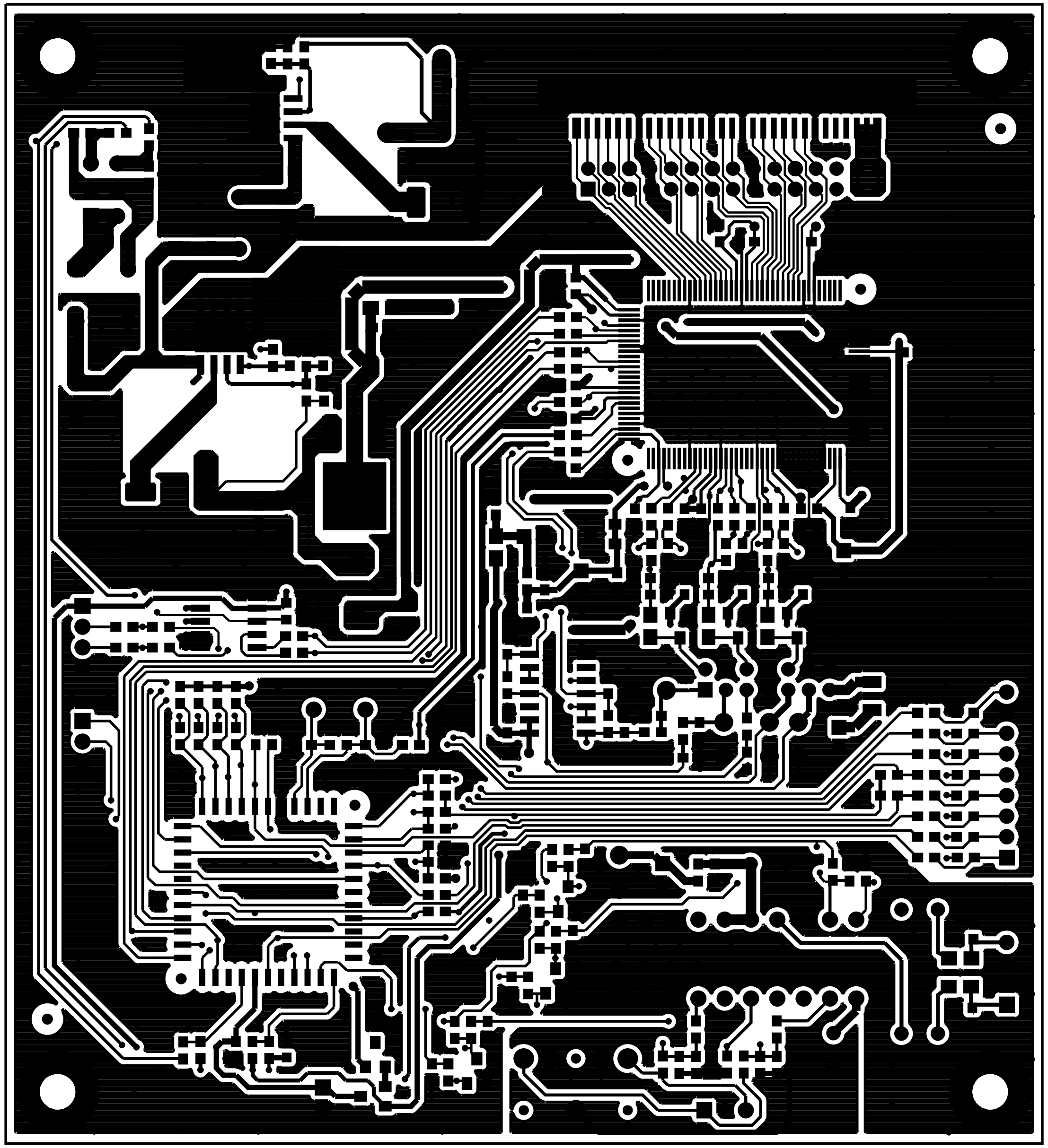
ViewSonic Corporation		
Model		
Title	AUDIO IN	
Date		Rev:


CN9
PIN HEARD 3X2 PH=2.54mm
L15
RH3.5x6x1.0W
L12
RH3.5x6x1.0w
12V
C77
0.1u
C78
0.1u
C79
470uF/16V
C81
0.1uF
C82
NC
R66
1.2K
C76
1uF/0603
DGND DGND
R65
2K
U6
AP1509
Vin
FB
Output
SD
GND
R67
0
R68
100
BL_EN
C87
0.1u
R69
100
BL_BRIGHT
C88
0.1u
L11
47uH/1.5A
3.3VP
D10
SS14
C83
0.1u
C80
470uF/16V
D11
3V6
DGND
3.3V
L10
RH3.5x6x1.0W
C84
0.1u
C85
100u/16V
C86
0.1u
1.8V
U8
LDO_1117-1.8
VIN
CASE
VOUT
C93
0.1u
C92
100u/16V
C94
0.1u
R70
3.6K
R71
1.2K
C89
1uF/0603
PANEL_VCC=3.3V R98=2k
PANEL_VCC=5.0V R70=3.6k
Panel 15" D12=SS14
Panel 17"/19" D12=SR34
PANEL_VCC
12V
L13
RH3.5X6X1.0W
C90
100uF/16V
C91
0.1u
C98
0.1u
C96
100uF/16V
U9
AP1509
L14
47uH/1.5A
D12
SS14
C99
0.1u
C97
470uF/16V
R75
10k
D13
5V6
PWR_EN
H3
H4
H1
H2
ViewSonic Corporation
Model
Title
Power
Date
Rev:

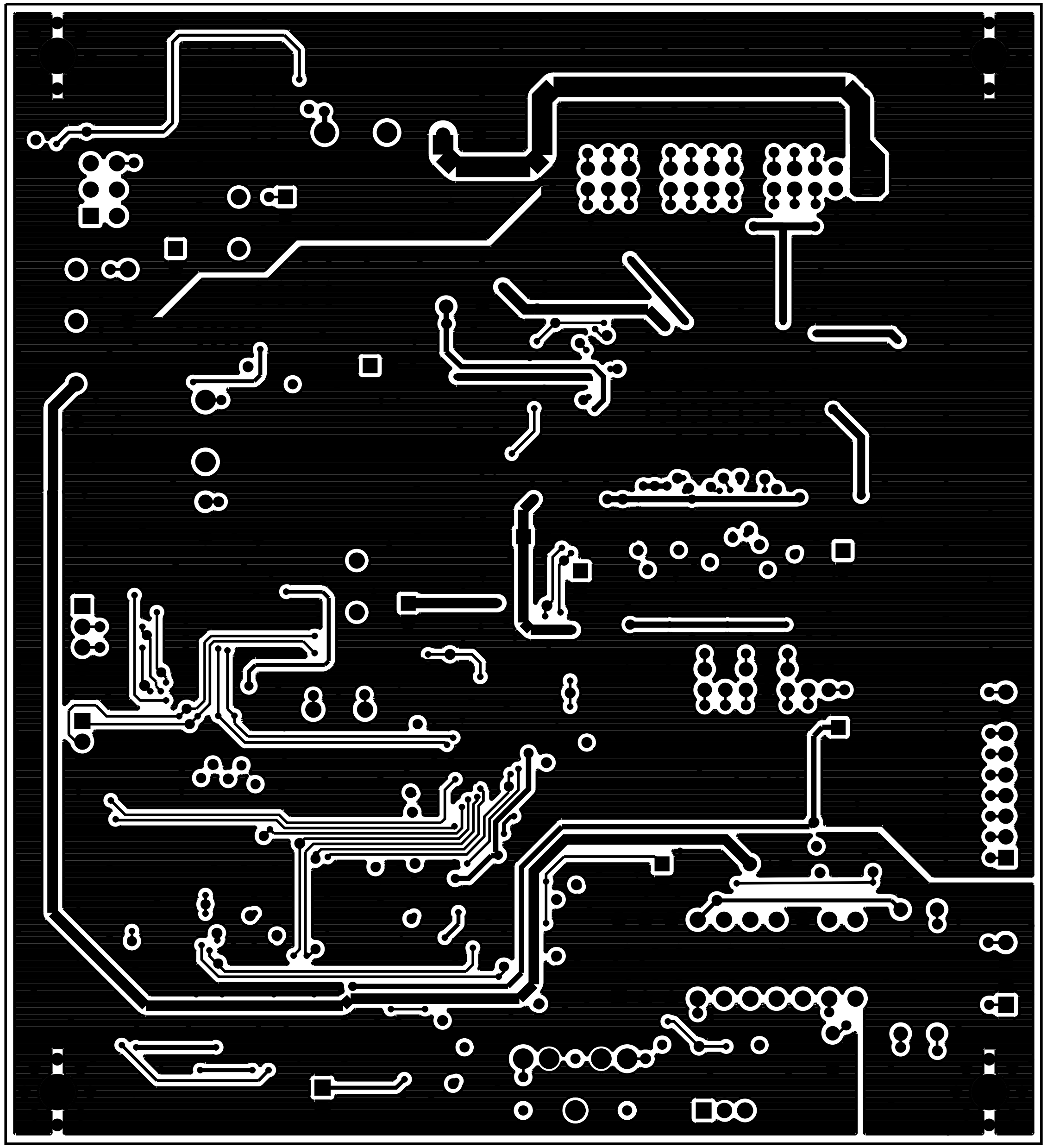


ViewSonic Corporation		
Model		
Title	K/B	
Date		Rev:

11. PCB Layout Diagrams

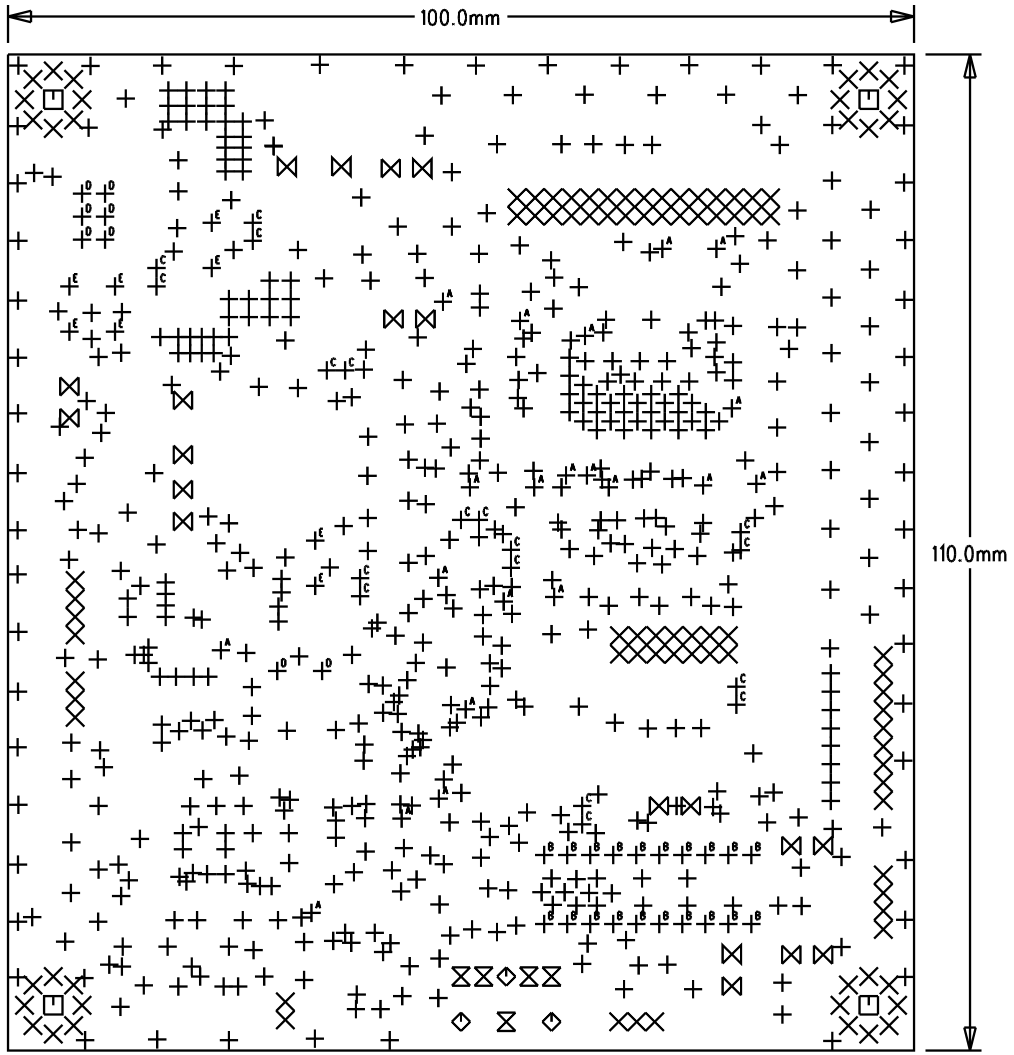


ViewSonic Corporation		
Model		
Title	COMPONENT SIDE	
Date		Rev:

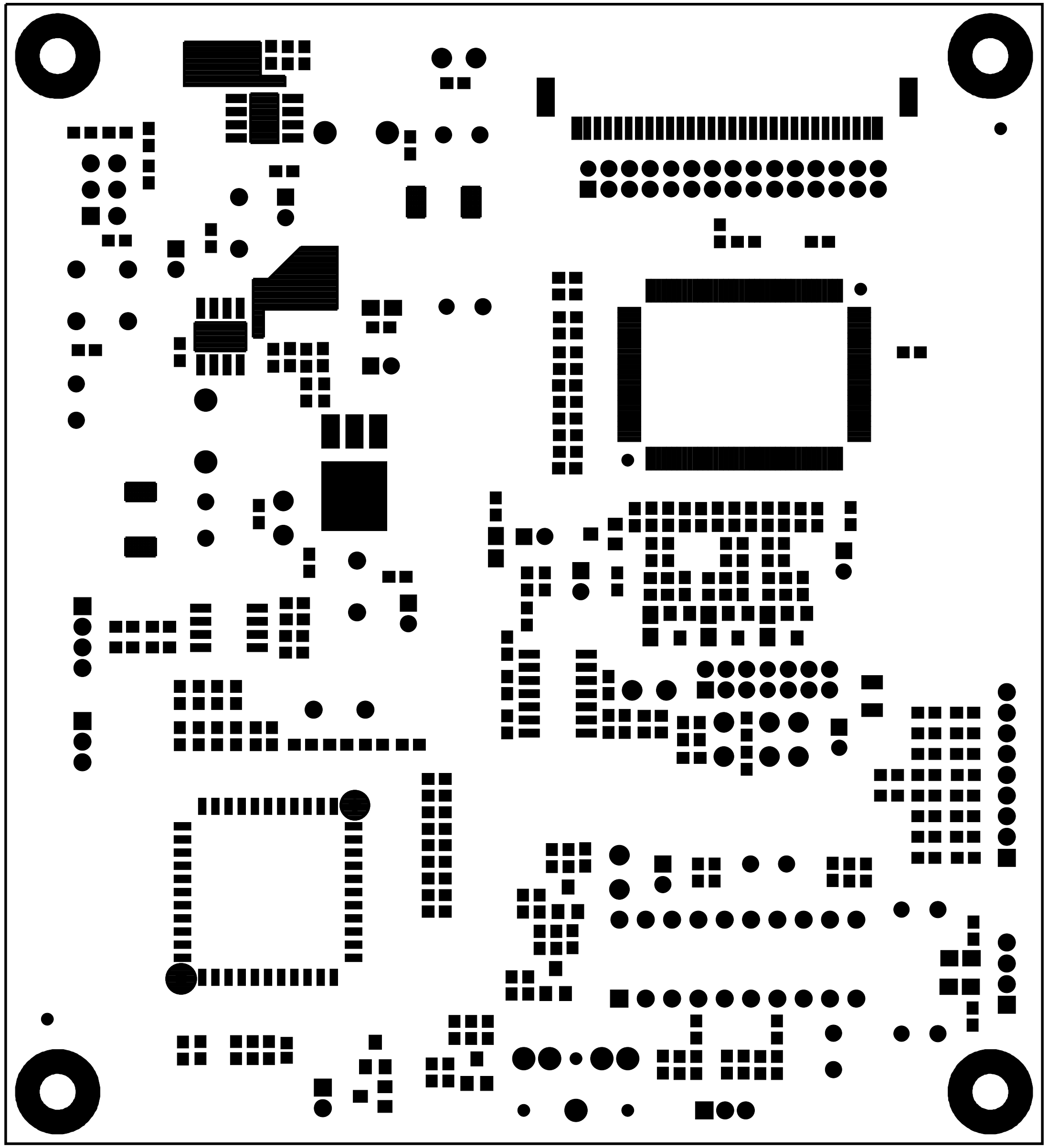


ViewSonic Corporation		
Model		
Title	COPPER BOTTOM	
Date		Rev:

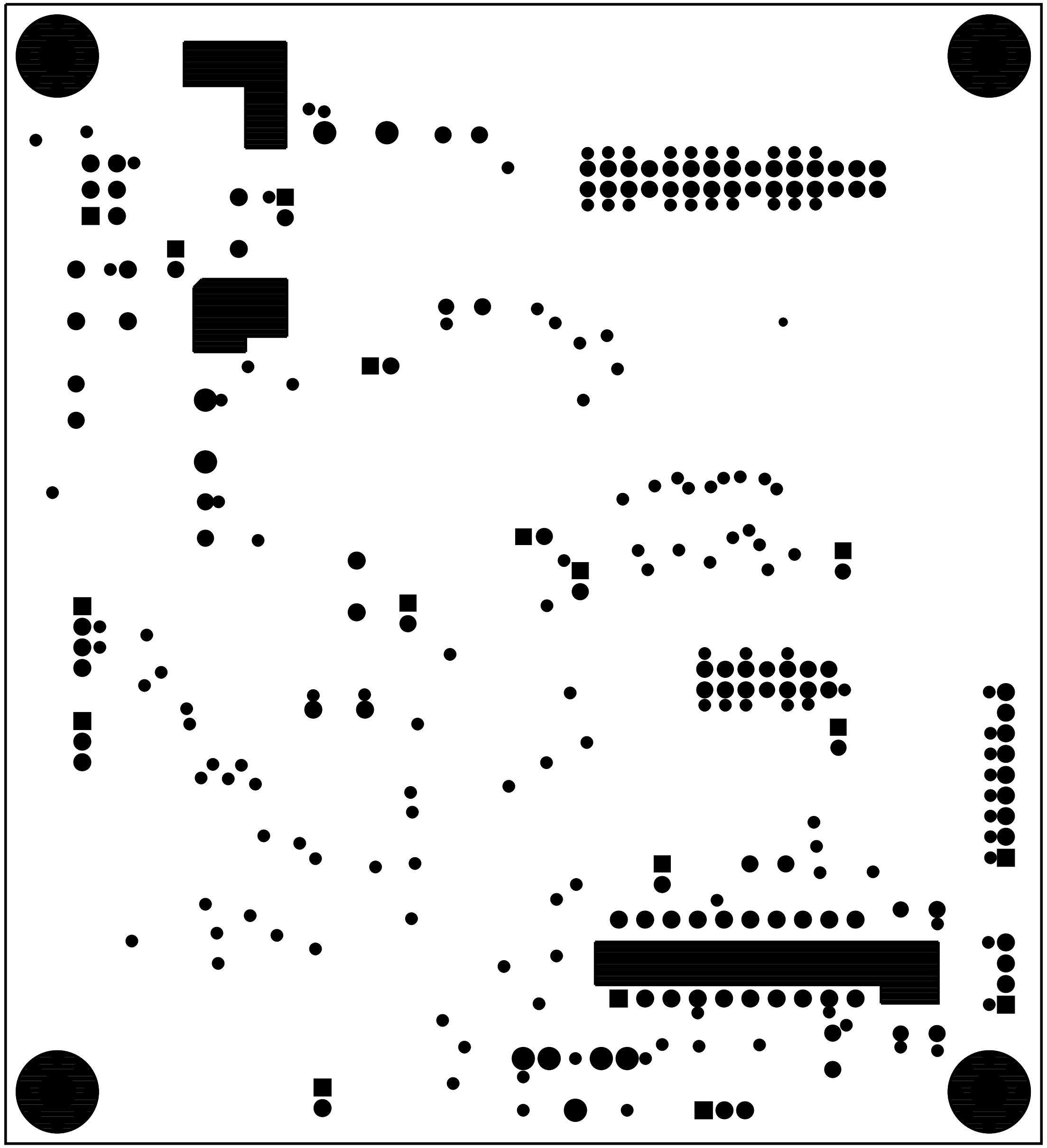
SIZE	QTY	SYM	PLTD	TOL
12	595	+	YES	+/-0.06MM
20	21	+A	YES	+/-0.06MM
28	18	+C	YES	+/-0.06MM
31.5	101	X	YES	+/-0.06MM
35	20	+B	YES	+/-0.06MM
35.43	20	⋈	YES	+/-0.06MM
37	8	+D	YES	+/-0.06MM
39.37	8	+E	YES	+/-0.06MM
47.24	5	⧗	YES	+/-0.06MM
62.99	3	◇	NO	+/-0.06MM
137.8	4	□	NO	+/-0.06MM



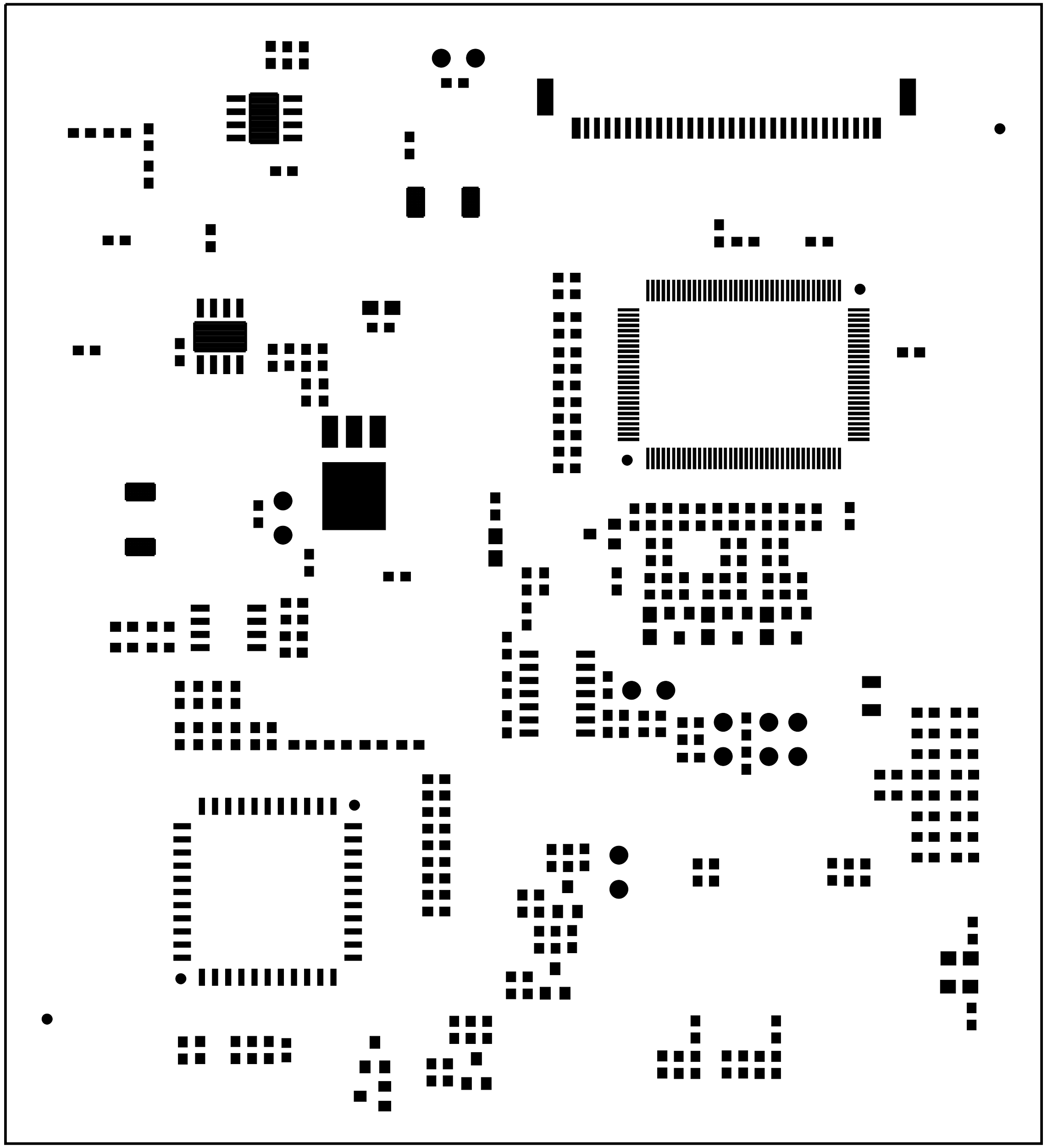
ViewSonic Corporation		
Model		
Title	DRILL DRAWING	
Date		Rev:



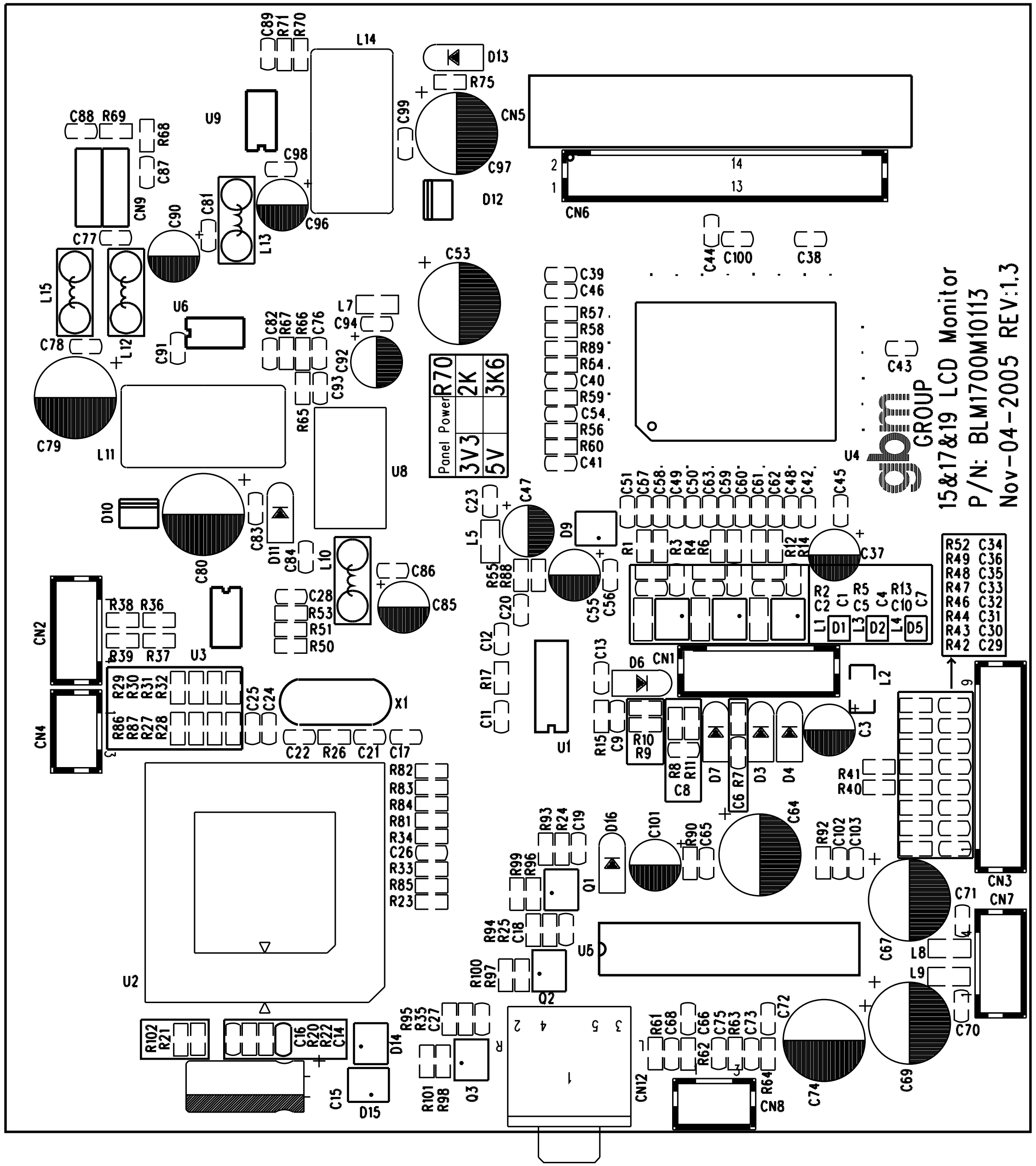
ViewSonic Corporation		
Model		
Title	SOLDER MASK TOP	
Date		Rev:



ViewSonic Corporation		
Model		
Title	Solder Mask Bottom	
Date		Rev:



ViewSonic Corporation		
Model		
Title	PASTE MASK TOP	
Date		Rev:



ViewSonic Corporation		
Model		
Title	SILKSCREEN TOP	
Date		Rev:

* Reader's Response*

Dear Readers:

Thank you in advance for your feedback on our Service Manual, which allows continuous improvement of our products. We would appreciate your completion of the Assessment Matrix below, for return to ViewSonic Corporation.

Assessment

A. What do you think about the content of this Service Manual?

Unit	*Excellent*	*Good*	*Fair*	*Bad*
1. Precautions and Safety Notices				
2. Specification				
3. Front Panel Function Control Description				
4. Circuit Description				
5. Adjustment Procedure				
6. Troubleshooting Flow Chart				
7. Recommended Spare Parts List				
8. Exploded Diagram and Exploded Parts List				
9. Block Diagrams				
10. Schematic Diagrams				
11.PCB Layout Diagrams				

B. Are you satisfied with this Service Manual?

Item	*Excellent*	*Good*	*Fair*	*Bad*
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any other opinions or suggestions regarding this service manual?

Reader's basic dada:

Name:		**Title:**	
Company:			
Add:			
Tel:		**Fax:**	
E-mail:			

After completing this form, please return it to ViewSonic Quality Assurance in the USA at facsimile 1-909-839-7943. You may also e-mail any suggestions to the Director, Quality Systems & Processes (marc.maupin@viewsonic.com)